

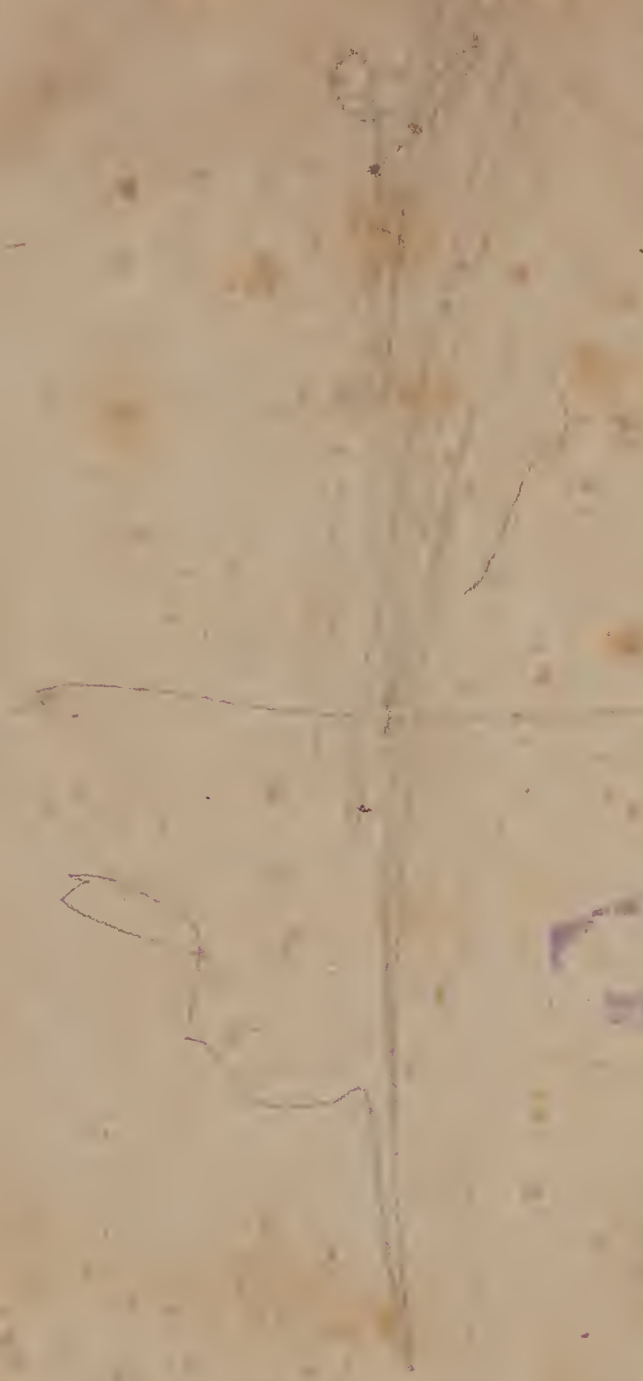






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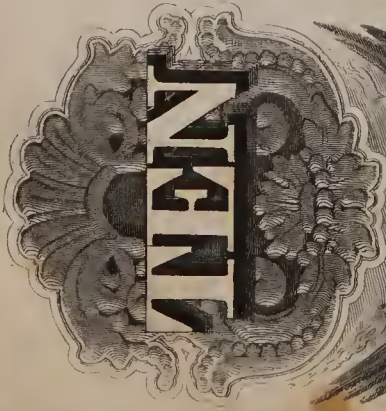




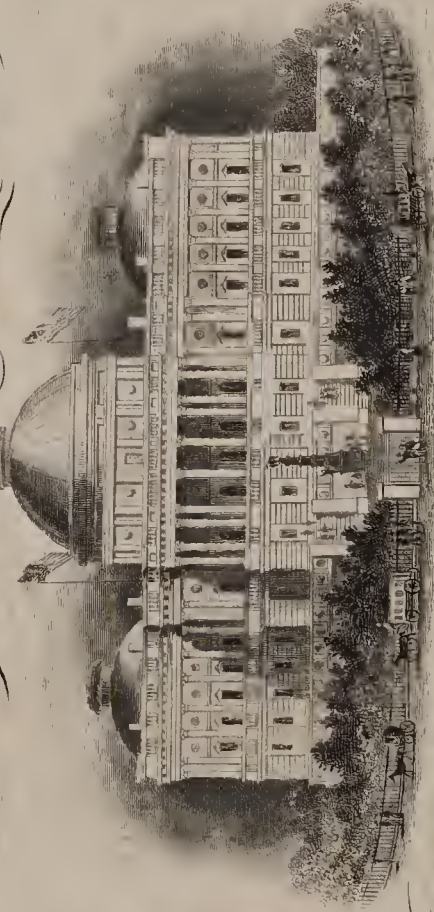
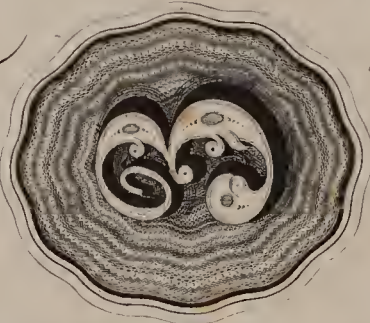








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AND  
JAMES H. MASON  
AND  
JAMES H. MASON



# R E P O R T

OF THE

## COMMISSIONER OF PATENTS,

FOR

THE YEAR 1850.

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### PART I.

### ARTS AND MANUFACTURES.

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#### CONTENTS:

- I. FINANCES AND STATISTICS.
  - II. INVENTIONS AND CLAIMS.
  - III. EXAMINERS' AND MACHINIST'S REPORTS.
  - IV. HISTORICAL NOTICES OF INVENTORS AND PATENTEEES.
  - V. ABORIGINAL ARTS.
  - VI. EARLY MACHINERY IN AMERICA.
  - VII. COMMUNICATIONS.
  - VIII. ABSTRACTS FROM STATE PAPERS.
- 

WASHINGTON:

OFFICE OF PRINTERS TO HOUSE OF REPS.

1851.

1890

1890

1890

REPORT

COMMISSIONER OF PATENTS

FOR

THE YEAR 1890.

PART I.

AND THE MANUFACTURE

OF PATENTS

THE PATENT OFFICE  
WASHINGTON  
1891

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## REPORT

OF THE

## COMMISSIONER OF PATENTS.

UNITED STATES PATENT OFFICE, }  
January, 1851. }

SIR:—I have the honor to submit the Report of the proceedings of this bureau for the year 1850. [Part I., Arts and Manufactures.]

Most respectfully,

Your obedient servant,

THOMAS EWBANK.

To Hon. HOWELL COBB,

*Speaker of the House of Representatives.*

## I.

## FINANCIAL, STATISTICAL, &amp;c.

THE number of applications for patents received during the year ending December 31st, 1850, is twenty-one hundred and ninety-three; the number of caveats filed during the same period is six hundred and two.

The number of patents issued during the year 1850, is nine hundred and ninety-five; including twenty-seven re-issues, three additional improvements, and eighty-six designs. Three disclaimers have been entered during the year.

Within the year 1850, six hundred and eighty-four patents have expired, a list of which is annexed marked F. There were seventeen applications to extend patents, the terms of which were about to expire; seven of which were granted, and five rejected. Five are still pending. None have been extended by act of Congress within the year.

The receipts of the Office for the year 1850, on account of applications for patents, caveats, additional improvements, re-issues, extensions, recording assignments, powers of attorney, &c., and for copies, amount to \$86,927.05, as per statement marked A. The expenses of the Office for the year 1850, are as follows, viz:

For salaries \$29,260.94; contingent expenses \$13,430.19; books for the library, \$767.47; temporary clerks, \$13,361.67; agricultural statistics, \$3,850.35; refunding money paid by mistake, \$258.00; analysis of breadstuffs, \$500.00; compensation of librarian, \$500.00; Chief Justice of District of Columbia, sitting on appeals from Commissioner of Patents, \$100; on applications withdrawn, \$18,013.33; and restoring models, \$50; amounting in the whole sum to \$80,100.95, as per statement marked B:—leaving a balance to be carried to the credit of the Patent Fund of \$6,826.10 as per statement C.

On the first day of January, 1850, the amount of money in the Treasury to the credit of the Patent Fund was \$169,505.17. Of this sum, \$90,000 was appropriated by Congress by the act approved May 15th, 1850, "towards the completion of the "east wing of the Patent Office," which has been drawn out and expended. By the act of Congress approved September 30th, 1850, the further sum of \$110,000 was appropriated "for completing the east wing of the Patent Office building, &c., to be paid out of the Patent Fund, if so much of said fund remains unappropriated, and if not, the excess out of any money in the Treasury not otherwise appropriated." Of the amount last appropriated, \$71,000 has been drawn from the Patent Fund, leaving a balance in the Treasury to the credit of the Patent Fund on the first day of January, 1851, of \$15,331.27, as per statement D.

There were nine cases on the examiners' desks January 1st, 1850; the number of applications received during the year, twenty-one hundred and ninety-three; making the whole number of applications before the Office during the year, twenty-two hundred and two. Of this number, one hundred and sixty-nine cases remained unexamined on the 1st day of January, 1851.

The business of the Office for the past year shows the examination of two thousand and thirty-two applications, resulting in the issue of nine hundred and ninety-five patents, and ten hundred and thirty-eight rejections and suspensions as exhibited per statement E.



A statement is also appended showing the amount of fees received, applications and caveats filed, during each month in the year, marked F.

## [A.]

*Statement of receipts for patents, caveats, additional improvements, recording assignments, &c., and for copies.*

Amount received for patents, caveats, re-issues, and additional improvements,	\$80,750 00
Amount received for recording assignments, &c., and for copies,	6,177 05
Total,	\$86,927 05

## [B.]

*Statement of expenditures and payments made from the Patent Fund by the Commissioner of Patents from January 1st, 1850, to December 31st, 1850 inclusive, under the act of March 3d, 1837, and subsequent acts of Congress making provision for the expenses of the Patent Office, viz :*

For salaries,	\$29,260 94
“ Contingent Expenses,	13,430 19
“ Books for Library,	767 47
“ Temporary Clerks,	13,361 67
“ Agricultural Statistics,	3,859 35
“ Refunding money paid by mistake,	258 00
“ Withdrawals,	18,013 33
“ Compensation of Librarian,	500 00
“ “ District Judge,	100 00
“ Analysis of breadstuffs,	500 00
“ Restoring models,	50 00
	<hr/>
	\$80,100 95

## [C.]

*Statement of Receipts and Expenditures of the Patent Office for the year 1850.*

Amount received from all sources,	\$86,927 05
“ of expenditures of all kinds,	80,100 95

Amount carried to the credit of the Patent Fund for 1850, \$6,826 10

## [D.]

*Patent Fund, January 1st, 1850.*

Amount of fund January 1st, 1850,	\$169,505 17
Amount drawn out per acts of Congress approved	
May 15th, and September 30th, 1850,	161,000 00
	<hr/>
	\$8,505 17
Amount carried to the credit of the Patent Fund for 1850,	6,826 10
Amount remaining in the Treasury to the credit of the	
Patent Fund, January 1st, 1851,	\$15,331 27



The books of the Treasury show the balance to the credit of the Patent Fund, January 1st, 1851, to be somewhat less, which is explained by the following letter received from the 1st Comptroller, viz :

TREASURY DEPARTMENT,  
Comptroller's Office, January 21st, 1851. }

THOMAS EWBANK, Esq., Commissioner of Patents :

SIR:—In answer to your letter of inquiry of the 16th inst., I state that the balance in the Treasury to the credit of the Patent Fund at different periods has been as follows:

On the 31st December, 1842,	\$170,559 39
“ 30th June, 1849,	210,315 05
“ 30th June, 1850,	106,224 89
There has come into the Treasury, funds deposited between the 1st July and 31st December, 1850, amounting to	40,807 22
	147,032 11
Amount drawn out from 1st July to 31st December, 1850,	131,925 00

Balance due the Patent Fund December 31, 1850, \$15,107 11  
as appears now by the books of the Treasury. It is very likely, however, that some of the deposits made with depositories previous to December 31st, have not come in yet, which may, when they come in, swell the balance belonging to that fund on the 31st of December last, an hundred or two dollars, and possibly more than that.

Most sincerely yours,

ELISHA WHITTLESEY.

[E.]

*Statement of applications on hand January 1st, 1850, and number received during the year and acted upon.*

No. of cases on examiners' desks January 1st, 1850,	9
“ applications received in 1850,	2,193
“ before the Office during the year,	2,202
“ of Patents issued during the year,	995
“ of applications remaining unexamined,	169
“ of rejections and suspensions,	1,038
	2,202

[F.]

*Statement showing amount of fees received, and number of applications and caveats filed during each month of the year 1850.*

1850.	Cash Received.	Certificates Received.	Small Fees Received.	Total Received.	Applicat's Filed.	Caveats Filed.
January,	\$3,780	\$4,595	\$402.47	\$8,777.47	239	60
February,	3,705	3,070	464.26	7,239.26	176	60
March,	2,765	4,895	459.43	8,119.43	196	38
April,	2,990	3,095	598.72	6,683.72	177	48



1850.	Cash Received.	Certificates Received.	Small Fees Received.	Total Received.	Applicat's Filed.	Caveats. Filed.
May,	3,465	3,450	674.43	7,589.43	196	60
June,	3,515	4,890	442.83	8,847.88	191	44
July,	2,820	2,695	673.23	6,188.23	161	31
August,	2,835	2,910	542.93	6,287.93	174	49
September,	2,375	4,065	544.00	6,984.00	151	34
October,	2,615	3,000	480.57	6,095.57	166	61
November,	3,060	2,865	467.81	6,392.81	165	52
December,	2,840	4,455	426.32	7,721.32	199	65
	<u>\$36,765</u>	<u>\$43,985</u>	<u>\$6,177.05</u>	<u>\$86,927.05</u>	<u>2,193</u>	<u>602</u>

*Table exhibiting the business of the Office for the last ten years, and the necessity of an increase of clerical force.*

YEARS.	Applications Filed.	Caveats Filed.	Patents Issued.	Amount of Cash Received.	Amount of Cash Expended.
1841	847	312	495	\$40,413.01	\$23,065.87
1842	761	291	517	36,505.68	31,241.48
1843	819	315	531	35,315.81	30,776.96
1844	1045	380	502	42,509.26	36,344.73
1845	1246	452	502	51,076.14	39,395.65
1846	1272	448	619	50,264.16	46,158.71
1847	1531	533	572	63,111.19	41,878.35
1848	1628	607	660	67,576.69	58,905.84
1849	1955	595	1076	80,752.78	77,716.44
1850	2193	602	995	86,927.05	80,100.95

During the first entire year (1840) after two assistants were added to the examining force (previously consisting of two examiners) the number of applications received was 765, and of caveats 228. By the act approved May 27th, 1848, two more examiners and two assistants were added to the corps, based upon the business of the Office for the year 1847, during which year there were 1531 applications and 533 caveats received.

Thus *the present* examining force of the Office was deemed necessary for the transaction of that amount of business.

From the foregoing table it will be observed that in 1848 there were received 1628 applications and 607 caveats; in 1849, 1955 applications and 595 caveats; and in 1850, 2193 applications and 602 caveats; an increase over 1847 of *six hundred and sixty-two applications* for Patents and *sixty-nine caveats*; and an increase over 1840 of *fourteen hundred and twenty-eight applications and three hundred and seventy-four caveats*. Thus the business of the Office has nearly trebled within the last ten years, while the corps of examiners has only been doubled during that period.

The foregoing facts clearly indicate that two chief and two assistant examiners are necessary to meet the present demands of the Office, and prevent the business, now two months behindhand, from falling still further in arrears.



[ G. ]

## CLASSIFIED LIST OF PATENTS

THAT HAVE EXPIRED DURING THE YEAR 1850.

CLASS I.—AGRICULTURE, *including Instruments and Operations.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bee-hive .....	J. M. Hubbard .....	Canterbury, N. H. .	Feb. 5, 1836
Bee-hive .....	Ebenezer Beard .....	New Sharon, Me. .	Feb. 25, "
Bee-hive .....	Sturgess M. Judd .....	Danbury, Conn. .	Mar. 30, "
Bee-hive .....	James M. Weeks .....	Salisbury, Vt. .	June 30, "
Churn .....	Hezekiah Roberts .....	Seneca Falls, N. Y. .	Feb. 5, "
Churn .....	Simon Whittier .....	Vienna .....	Feb. 10, "
Churn .....	John E. Thomas .....	Winchester, O. .	Feb. 12, "
Churn .....	Amos Hanson .....	Windham, Me. .	Mar. 2, "
Churn .....	Thomas Nicholson .....	Newmarket, Va. .	Mar. 31, "
Churn .....	Charles Merriman .....	Middletown, Conn. .	April 21, "
Churn .....	Amasa Wharff .....	New Gloucester, Me. .	June 16, "
Churn .....	Samuel Tyler .....	New Gloucester, Me. .	June 25, "
Churn .....	Davis Variel .....	Minot, Me. .	July 1, "
Churn, dash .....	Samuel Jackson .....	Jay, Me. .	June 11, "
Corn hulling .....	Warren Carpenter .....	Newcastle, Pa. .	Jan. 23, "
Corn sheller .....	Warren Carpenter .....	Newcastle, Pa. .	Jan. 23, "
Corn sheller .....	Albert W. Gray .....	Middletown, Vt. .	Mar. 31, "
Corn shelling .....	Isaac A. Hedges .....	Elmira, N. Y. .	Feb. 3, "
Corn shelling .....	Henry G. Neal .....	Poultney, Vt. .	Feb. 10, "
Corn shelling .....	Ira Smith .....	Downington .....	Feb. 13, "
Corn shelling .....	J. C. Baldwin .....	Staunton, Va. .	Oct. 11, "
Cotton drying, &c. .	John Philbrick .....	Cold Spring, Miss. .	Feb. 12, "
Cultivator .....	James M. Garnett .....	Loretto, Va. .	Feb. 3, "
Cultivator .....	J. S. Eastman .....	Baltimore, Md. .	June 30, "
Cultivator, or hoe harrow .....	N. J. Shull .....	Bensalem, Pa. .	Nov. 26, "
Cutting grain &c. (harvesting machine) .....	H. Moore and J. Hascall .....	Kalamazoo, Mich. .	June 28, "
Cutting grass .....	Henry Allen .....	Fayetteville, Tenn. .	June 2, "
Cutting grass .....	John Drummond .....	Waterford, N. Y. .	June 30, "
Cutting grass .....	William C. Greenleaf .....	Andover, Me. .	July 1, "
Cutting and thrashing .....	E. Briggs and G. G. Carpenter .....	Fort Covington .....	Feb. 5, "
Cutting, scythe .....	Ezra Barnett .....	Warner, N. H. .	June 16, "
Cutting, scythe .....	S. Lamson .....	Cummington, Mass. .	Oct. 29, "
Harrow, press .....	John C. Concklin .....	Peekskill, N. Y. .	Ap'l 21, "
Hoe .....	Adria Allen .....	Ramapoo, N. Y. .	Jan. 23, "
Hoe, cast iron .....	Benjamin F. Boyden .....	Boston, Mass. .	Mar. 31, "
Hoe, garden .....	Isaac Averill .....	Plymouth, Mich. .	June 11, "
Hulling clover seed .....	J. B. and W. F. Poague .....	Lexington, Va. .	Feb. 17, "
Hulling clover seed .....	Cyrus B. Baldwin .....	Faircastle, Va. .	June 16, "
Hulling clover seed .....	Hildreth Robbins .....	Kennebec, Me. .	June 20, "
Hulling clover seed .....	J. Hopper & A. Doughty .....	Moresborough, Pa. .	June 30, "
Hulling cotton seed .....	Pierson Reading .....	Trenton, N. J. .	Ap'l 13, "
Hulling rice .....	Lewis Cole .....	New Gloucester, Me. .	June 16, "
Milk, preserving .....	John L. Granger .....	New York city .....	Mar. 19, "
Plough .....	John Dalkener .....	Canton, O. .	Jan. 15, "
Plough .....	Samuel Witherow .....	Gettysburg, Pa. .	Jan. 15, "
Plough .....	J. J. Chandler and P. Ranager .....	Milton, Me. .	Jan. 20, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Plough .....	William P. Cannon.....	Monroe co., Tenn..	Mar. 4, 1836 *
Plough .....	D. Prouty and J. Mears.	Boston, Mass.....	Mar. 4, "
Plough .....	John Farlee.....	Mercer county, Ky.	Ap'l 21, "
Plough .....	Nathan Locklin.....	Sparta, N. Y.....	Ap'l 28, "
Plough .....	Jacob Plank.....	Carlisle, Pa.....	June 2, "
Plough .....	Joshua Gibbs.....	Canton, O.....	June 16, "
Plough .....	Timothy Miller.....	Pittsburg, Pa.....	July 2, "
Plough .....	Isaac Snider .....	Mount Pleasant, Pa.	July 2, "
Plough .....	T. M. Tilford.....	Murfreesboro', Te..	July 1, "
Plough .....	B. Woodcock.....	Mount Pleasant, Pa.	Nov. 23, "
Plough, cotton.....	Harvey W. Pitts .....	Wilsonville, Ala....	Mar. 31, "
Plough, wheel.....	J. C. Ferguson.....	Hydesville, Mass...	June 22, "
Rake, horse.....	James W. Webb .....	Mount Morris, N. Y.	Feb. 5, "
Rake, horse.....	Erastus S. Root.....	Mount Morris, N. Y.	May 17, "
Seeding, corn planter.....	Charles R. Belt.....	Washington, D. C..	Jan. 15, "
Seeding, corn planter and cotton..	George C. Boyd.....	New Loudon, Pa....	April 11, "
Seeding, cotton planter .....	Michael Beam.....	Buffalo, N. C.....	Mar. 30, "
Seeding, cotton planter .....	Henry Allen.....	Fayetteville, Tenn..	June 16, "
Seeding, cotton planter .....	Henry Blair.....	Glenross, Md.....	Aug. 31, "
Seeding, grain, sowing.....	William C. Greenleaf....	Andover, Me.....	July 1, "
Smut machine.....	Abraham Mudge.....	Canajoharie, N. Y..	Feb. 25, "
Smut machine.....	M. B. Spafford.....	Gainesville, N. Y..	Mar. 8, "
Smut machine.....	W. B. Ryan.....	Mount Morris, N. Y.	April 23, "
Smut machine.....	Robert Engle.....	Burlington co., N. J.	June 2, "
Smut machine.....	J. T. Town.....	Mount Morris, N. Y.	June 16, "
Smut machine.....	Rufus Dennison.....	Wilton, Me.....	July 2, "
Smut machine.....	Jonas Pratt.....	Otsego, N. Y.....	July 2, "
Smut machine, and hulling.....	Samuel Richardson.....	Elmira, N. Y.....	Feb. 5, "
Straw cutter.....	Isaac S. Wright.....	Elbridge, N. Y.....	Feb. 3, "
Straw cutter.....	C. D. Skinner and D. Read	Haddam, Conn.....	Feb. 10, "
Straw cutter.....	Joseph Everett.....	Geneva, N. Y.....	Feb. 10, "
Straw cutter.....	James M. Wolfolk.....	Oldham county, Ky.	Feb. 21, "
Straw cutter.....	James Hyde.....	Darien, N. Y.....	Feb. 23, "
Straw cutter.....	E. Tarbox and C. F. Kneeland .....	Ogden, N. Y.....	June 22, "
Straw cutting box.....	Mallory M. Marshall....	Smithfield, Va.....	July 1, "
Thrashing and cleaning clover seed	John Goodyear.....	S. Middletown, Pa..	June 2, "
Thrashing clover seed.....	William Loomis.....	Ashford, Conn.....	July 2, "
Thrashing machine.....	Eleazer Brown.....	Chenango, N. Y....	Jan. 20, "
Thrashing machine.....	Lewis H. Mans .....	Danville, Pa.....	Feb. 5, "
Thrashing machine.....	Thomas Bedee.....	Sandwich, N. H....	Feb. 10, "
Thrashing machine.....	James Cooper.....	Greene county, O...	Feb. 20, "
Thrashing machine.....	Hugh and J. W. Edgar..	Wayne county, O...	Mar. 23, "
Thrashing machine.....	Hugh Barclay.....	Lexington, Va.....	April 28, "
Thrashing machine.....	Nicholas Goldsborough..	Easton, Md.....	May 6, "
Thrashing machine.....	George Beaumont.....	Mount Pleasant, Pa.	May 6, "
Thrashing machine.....	Jacob S. Rollins .....	New Gloucester, Me.	June 2, "
Thrashing machine.....	J. Bailey and J. Sprinkle	Rockingham co., Va.	June 20, "
Thrashing machine.....	Porter Cleaveland .....	Yancey Mills, Va...	June 25, "
Thrashing machine.....	Aaron Parsons.....	Rockfield, Me.....	July 2, "
Winnowing clover seed.....	James Manning.....	Lambertville, N. Y.	Jan. 6, "
Winnowing machine.....	David Wilson.....	Johnston, Vt.....	Feb. 20, "
Winnowing machine.....	Jonathan Beane.....	Mountville, Me.....	Mar. 31, "
Winnowing wheat.....	D. Flanders and C. Rathburn.....	Ft. Covington, N. Y.	Feb. 13, "



CLASS II.—METALLURGY *and Manufacture of Metals.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Andirons, bars.....	J. Cockran.....	Batavia, N. Y.....	July 1, 1836
Anvil block.....	S. Van Tiers.....	Hanover iron works, Penn.....	Mar. 19, "
Awl haft.....	David M. Smith.....	Gilsum, N. H.....	Mar. 31, "
Awl haft.....	William Campbell.....	Gilsum, N. H.....	July 1, "
Axes.....	Elisha K. Root.....	Canton, Conn.....	Mar. 30, "
Bit, spiral, for cutting screws.....	George Page.....	New Hampshire.....	Nov. 17, "
Bolts and spike, drawing.....	Richard Haynes.....	Portsmouth, Va....	July 2, "
Columns, cast iron, &c., for build- ings.....	Jordan L. Mott.....	New York.....	June 11, "
Door plates.....	J. S. Richardson.....	Boston, Mass.....	Oct. 15, "
Drills for metal.....	William R. Jones.....	Granville, N. Y....	Jan. 11, "
Fire-proof chest.....	James Matthews.....	New York.....	June 16, "
Fire-proof safe.....	Daniel Harrington.....	Philadelphia, Pa....	Mar. 2, "
Forge, blacksmith.....	Charles Richardson.....	Greenfield, N. H....	Mar. 12, "
Furnace, blast.....	Benjamin Kugler.....	Philadelphia, Pa....	June 2, "
Furnace, smelting ore.....	Arundius Tiers.....	Kensington, Pa....	April 11, "
Gouges, making.....	M. M. Brainard.....	Great Barrington, Mass.....	Mar. 4, "
Hinges, butt, &c.....	Welcome Whittaker.....	Troy, N. Y.....	Mar. 12, "
Hinges, butt.....	James Rouse.....	Troy, N. Y.....	May 17, "
Iron and Steel, making.....	William P. Boyden.....	New York.....	June 11, "
Knobs, glass, &c. for doors, &c..	E. Robinson, F. Draper and J. H. Lord.....	Cambridge and Bos- ton, Mass.....	Oct. 20, "
Knobs, glass, &c., for doors, (an- tedated, Sept. 20, 1836).....	E. Robinson, F. Draper and J. H. Lord.....	Cambridge and Bos- ton, Mass.....	Dec. 8, "
Latch, mortise.....	William Coover.....	Erie, Pa.....	Feb. 17, "
Locks.....	P. B. Quimby.....	Belfast, Maine.....	May 23, "
Lock, door.....	Solomon Andrews.....	Perth Amboy, N. J.	Jan. 11, "
Lock, door.....	Abel Conant.....	Lowell, Mass.....	Mar. 12, "
Lock, door.....	James McClory.....	New York.....	Mar. 18, "
Lock, door.....	Benjamin Smith.....	Canton, Conn.....	Apr. 13, "
Lock, door.....	Almon Reoff.....	New York.....	July 1, "
Lock, door.....	James McClory.....	New York.....	July 2, "
Locks, and lever key.....	Augustus Prutzman.....	Philadelphia, Pa....	Mar. 4, "
Locks, mortise.....	P. and E. W. Blake.....	New Haven, Conn..	Feb. 5, "
Ors, sweeping and washing.....	William Davis.....	New York.....	Apr. 28, "
Patterns for casting.....	L. H. Mans.....	Danville, Pa.....	Feb. 5, "
Polishing iron and brass wire for weavers' reeds.....	Arnold Wilkinson.....	Providence, R. I....	Aug. 31, "
Saw, filing teeth of.....	Elijah Stoker.....	Sent to Georgetown.	Nov. 8, "
Saw teeth, cutting.....	Samuel G. Merriman...	Southington, Conn..	Apr. 11, "
Screws, cutting and heading, wire.	J. H. Pierson.....	Ramapo, N. Y.....	Nov. 26, "
Screws, cutting notches in heads.	J. H. Pierson.....	Ramapo, N. Y.....	Nov. 28, "
Screws, cutting, wood, &c. threads of.....	H. Cram.....	Clarkstown, N. Y..	Nov. 14, "
Screw, manufacturing.....	William Keane.....	Monroe, N. Y.....	Feb. 13, "
Spoons, casting.....	William Mix.....	Prospect, Conn.....	June 28, "
Spoons, silver, mill.....	J. Brockway.....	Troy, N. Y.....	Sep. 20, "
Tew iron.....	John Shugert.....	Elizabethtown, Pa..	Mar. 31, "
Window blinds, fastener.....	Jonathan Bacon.....	Bedford, Mass.....	Apr. 28, "
Window fastening.....	Marcus Merriman, Jr. ..	New Haven, Conn..	June 20, "
Window shutter, fastening.....	Neal Hall and Jotham Chase.....	Cumberland & York County, Maine...	Oct. 11, "
Wire, cap.....	Melville Kelsey.....	New York.....	Mar. 12, "
Wrench, rack.....	Alonzo G. Hull.....	Troy, N. Y.....	June 20, "



CLASS III.—MANUFACTURES of Fibrous and Textile Substances, including Machines for preparing Fibres of Wool, Cotton, Silk, Fur, Paper, &c.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Cordage and rope .....	William Fanning .....	New York .....	Feb. 3, 1836
Cordage, rope, making .....	J. Whiteinan .....	Philadelphia, Pa. ....	Jan. 15, "
Cordage, rope, serving .....	Adam Montgomery .....	New York .....	Mar. 18, "
Cordage, rope, serving .....	Charles Parke .....	New York .....	Apr. 13, "
Cordage, rope yarn, putting up ..	James H. Echols .....	Lynchburg, Va. ....	Oct. 20, "
Flax and hemp, and Manilla grass, combing, &c. ....	S. Couillard, Jr. ....	Boston, Mass. ....	Oct. 19, "
Gin, cotton .....	W. and J. McCreight ..	Winsborough, S. C. ....	Feb. 5, "
Gin, cotton .....	Henry Clark .....	New London, Conn. ....	Feb. 25, "
Gin, cotton .....	Pierson Reading .....	Trenton, N. J. ....	Apr. 13, "
Gin, cotton .....	James McCreight .....	Winsborough, S. C. ....	July 2, "
Gin, cotton, grates .....	Edwin Keith .....	Bridgewater, Mass. ....	Mar. 4, "
Hats, blocking .....	W. W. Jameson .....	Wheeling, Ohio .....	Mar. 30, "
Hats, bodies, stiffening .....	J. P. Kettell and J. Wright	Worcester Co., Mass. ....	June 11, "
Hats, bodies, stiffening .....	E. P. Spear .....	Lexington, Mass. ....	July 2, "
Hats, elastic, ventilating .....	Daniel Greenleaf .....	Vicksburg, Miss. ....	Nov. 26, "
Hats, napping .....	L. Lyon, 2d .....	Needham, Mass. ....	Apr. 13, "
Hats, palm leaf .....	Frederick Groening .....	Brooklyn, N. Y. ....	June 25, "
Hats, water proof, silk .....	George B. Dexter .....	Boston, Mass. ....	Jan. 6, "
Hemp, breaking .....	John Pursell .....	Perryville, Ky. ....	Mar. 18, "
Loom, harness for .....	John Blackmar .....	Killingly, Conn. ....	Oct. 20, "
Loom, power .....	F. C. Lewis .....	Grafton, Mass. ....	Mar. 30, "
Loom, power .....	Benjamin Lapham .....	Waterford, N. Y. ....	June 28, "
Loom, power, and taking up motion .....	H. Hendrick .....	Killingly, Conn. ....	Sep. 22, "
Loom, power, and taking up motion .....	John P. Comins .....	Killingly, Conn. ....	Oct. 20, "
Loom, reeds, machine for making ..	Jeptha A. Wilkinson .....	Providence, R. I. ....	May 23, "
Loom, weaving .....	Cullen Whipple .....	Douglass, Mass. ....	June 11, "
Loom, weaving cloth for stocks ..	Conrad Kile .....	Philadelphia, Pa. ....	Oct. 11, "
Napping cloth .....	Stephen Marsh .....	Jericho, Vt. ....	Jan. 11, "
Oakum and hair picking .....	R. B. Lewis .....	Hallowell, Maine .....	June 25, "
Paper, cylinders for drying .....	H. P. Howe .....	Shirley, Mass. ....	Sep. 20, "
Paper, drying .....	Henry Howe .....	Shirley, Mass. ....	Mar. 12, "
Paper, making .....	Charles Forbes .....	East Hartford, Conn. ....	Feb. 20, "
Picking and breaking wool .....	John Shly .....	Augusta, Ga. ....	Oct. 27, "
Rags, cleaning .....	William Debit .....	Hartford, Conn. ....	July 1, "
Rags, dusting .....	E. Burt and Geo. Carriel	Manchester, Conn. ....	Nov. 28, "
Silk, winding .....	Adam Brooks .....	South Scituate, Mass. ....	June 20, "
Silk, winding, gimp or cord .....	Adam Brooks .....	South Scituate, Mass. ....	June 20, "
Spinning cotton .....	William P. Brayton .....	New York City .....	June 25, "
Spinning, fliers .....	Samuel Ladd .....	Waltham, Mass. ....	Feb. 20, "
Spinning, fliers .....	Samuel Ladd .....	Waltham, Mass. ....	May 6, "
Spinning, fliers, cotton .....	John Morse .....	Newton, Mass. ....	June 25, "
Spinning hemp, &c. ....	Moses Day .....	Roxbury, Mass. ....	June 2, "
Spinning machine .....	John Morgan .....	Manayunk, Pa. ....	May 14, "
Spinning, roping; cotton .....	William Fowler .....	Fishkill, N. Y. ....	Mar. 23, "
Spinning, spindle, and flier .....	W. T. Eddy .....	Ithica, N. Y. ....	Feb. 10, "
Spinning wool .....	Sykes and Conradt .....	Fredericktown, Md. ....	Mar. 3, "
Spinning wool .....	J. Withered .....	Baltimore, Md. ....	Mar. 30, "
Wool, combing .....	S. Couillard's assignees ..	Boston, Mass. ....	June 16, "
Wool, or flax, comber .....	William W. Calvert .....	Lowell, Mass. ....	July 2, "
Wool, hair, &c., forming web without spinning, &c. ....	J. Arnold & G. G. Bishop	Norwalk, Conn. ....	Oct. 20, "
Yarn, woollen .....	William B. Walker .....	Hillsborough Bridge, N. H. ....	July 1, "



CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including *Medicine, Dying, Color-making, Distilling, Soap and Candle making, Mortars, Cements, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Blood, equalizing the.....	S. R. Terrell.....	Burton, Miss.....	Feb. 5, 1836
Candles, moulds.....	Jefferson Dunlap.....	New Holland, Pa....	Mar. 8, "
Caoutchouc, application to cloths.....	E. M. Chaffee.....	Roxbury, Mass....	Aug. 31, "
Caoutchouc, dissolving.....	Patrick Mackie.....	New York City....	Mar. 23, "
Cement, hydraulic.....	Levi Kidder.....	New York City....	Jan. 15, "
Cement, hydraulic.....	John White.....	Syracuse, N. Y....	Jan. 23, "
Distilling.....	Peter Swartz, jr.....	Muncey, Pa.....	June 25, "
Distilling.....	A. R. Kerr & H. Hoover	Waynesborough, Pa.	July 1, "
Distilling, cold.....	A. V. H. Webb.....	Utica, N. Y.....	May 14, "
Distilling, still for.....	John Wright.....	New York.....	Feb. 20, "
Dying hats.....	Aaron Gould.....	Washington, Conn.	Jan. 11, "
Extracts, making.....	T. Close & J. C. Sanford	Rye, N. Y.....	Mar. 18, "
Fermenting and distilling spirits.....	Isaiah Stowell.....	Manchester, N. H..	Feb. 5, "
Gypsum, applied to cisterns.....	J. Flint and Clark Mills.	New York, N. Y....	Mar. 4, "
Lead, white.....	Homer Holland.....	Westfield, Mass....	Mar. 18, "
Lead, white.....	Edward Clark.....	Saugerties, N. Y....	June 20, "
Lead, white.....	Joseph Richards.....	Philadelphia, Pa....	Dec. 2, "
Light, and heat, generating.....	H. L. Barnum.....	New York.....	June 2, "
Matches, friction.....	Alonzo D. Phillips.....	Springfield, Mass...	Oct. 24, "
Medicine, botanic.....	Samuel Thompson.....	Boston, Mass.....	May 6, "
Mineral water, soda fountain.....	Jos. Boston & T. Bryant	New York.....	Apr. 11, "
Ointment, for cancer.....	Elias Gilman.....	Licking, Ohio.....	Mar. 31, "
Paint, composition.....	H. Hibbard.....	Darien, N. Y.....	Sep. 20, "
Pearl ash.....	J. and N. Paree.....	Linklean, N. Y....	May 14, "
Pitch, composition.....	Thomas H. Sherman....	Scriba, N. Y.....	Mar. 4, "
Pitch, making.....	Henry Ruggles.....	New York.....	Mar. 19, "
Potash, and pearl ash.....	Elijah Williams.....	Erie, Pa.....	Mar. 8, "
Salt, manufacturing.....	Richard K. Cralle.....	Lynchburg, Va.....	Mar. 18, "
Salt, supplying.....	Peter Cooper.....	New York.....	Feb. 20, "
Sores, curing.....	Reuben Rood.....	Centre Lisle, Brown county, N. Y....	Feb. 20, "
Starch, rice.....	W. and T. Liversidge...	Dorchester, Mass...	Feb. 17, "
Turpentine, spirits, extracting.....	J. Jennings.....	New York.....	July 1, "

CLASS V.—CALORIFIC, comprising *Lamps, Fire-places, Stoves, Grates, Furnaces for heating Buildings, Cooking Apparatus, Preparation of Fuel, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Baker, reflecting.....	L. B. Olmstead.....	Binghampton, N. Y.	Jan. 20, 1836
Chimneys, ovens, &c.....	Elihu Smith.....	Ithica, N. Y.....	July 1, "
Cooking stove.....	R. G. Cochran.....	Francistown, N. H.	Feb. 3, "
Cooking stove.....	Daniel Williams.....	Scaghticoke, N. Y..	Feb. 3, "
Cooking stove.....	B. and A. Titus.....	Marshall, N. Y....	Feb. 25, "
Cooking stove.....	John Liddle.....	Schoharie, Ohio....	Mar. 12, "
Cooking stove.....	Charles Vale.....	Newark, N. J.....	Mar. 18, "
Cooking stove.....	O. Wilson.....	Concord, Mass.....	Mar. 23, "
Cooking stove.....	B. H. Pearson.....	Warner, N. H.....	Mar. 31, "
Cooking stove.....	Charles Vale.....	Newark, N. J.....	April 13, "
Cooking stove.....	Jonas Kendall, assignee of J. Perkins.....	Ipswich, Mass.....	April 28, "
Cooking stove.....	E. G. Currier.....	Warner, N. H.....	June 2, "
Cooking stove.....	E. G. Currier.....	Warner, N. H.....	June 2, "
Cooking stove.....	Charles Higgins.....	Turner, Me.....	June 2, "
Cooking stove.....	William A. Arnold.....	Northampton, Mass.	June 16, "
Cooking stove.....	Gould Throp.....	New York city.....	June 25, "
Cooking stove.....	Thomas Shaw.....	N. Yarmouth, Me..	June 25, "
Cooking stove.....	Sebastian H. Lacier.....	Muncungy, Pa.....	June 28, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Cooking stove.....	P. F. Perry.....	Rockingham, Vt....	June 28, 1836
Cooking stove.....	Beriah Douglas.....	Albany, N. Y.....	June 30, "
Cooking stove.....	Asahel Lear.....	Wendall, N. H.....	July 1, "
Cooking stove.....	E. Andrews and S. Austin	Bradford, N. H....	July 1, "
Cooking stove.....	Elisha N. Pratt.....	Albany, N. Y.....	July 1, "
Cooking stove.....	Chester Granger.....	Pottsford, Vt.....	July 2, "
Cooking stove.....	P. C. Traver.....	West Troy, N. Y..	July 2, "
Cooking stove.....	Elisha Lyman.....	E. Hampton, Mass.	July 2, "
Cooking stove.....	John Whiting.....	Boston, Mass.....	Oct. 20, "
Cooking stove.....	S. B. Spalding.....	Brandon, Vt.....	Nov. 17, "
Cooking stove, and parlor.....	Nicholas Smith.....	New Hampton, N. H.	Oct. 27, "
Fire, extinguishing.....	Isaac Clowes.....	Norfolk, Va.....	July 2, "
Fire place.....	Elijah Skinner.....	Sandwich, N. H....	Mar. 12, "
Fire place.....	William Burgess.....	Middleboro', Mass..	Mar. 12, "
Fire place.....	William R. Prescott.....	Hallowell, Me.....	Mar. 19, "
Fire place.....	Reuben Buck.....	Acton, Me.....	July 1, "
Fire place, or stoves.....	Foster Stevens.....	Springfield, Mass..	Mar. 2, "
Fuel, saw-dust, drying, &c.....	William Avery.....	Syracuse, N. Y.....	Oct. 11, "
Furnaces and boiler combined....	Alexander Harrison.....	New Haven, Conn..	Mar. 2, "
Furnaces for warming buildings..	F. A. Fickhardt.....	Easton, Pa.....	Sept. 8, "
Grates.....	James Bennett.....	New York.....	May 14, "
Grates, cooking.....	John James Giraud.....	Baltimore, Md.....	Feb. 10, "
Grates, parlor.....	William Anderson.....	New York.....	June 25, "
Grates, pendulum.....	Nathan Winslow.....	Portland, Me.....	July 2, "
Grates, portable.....	James Williamson.....	Washington, D. C..	Nov. 8, "
Grates, sliding.....	John C. Howard.....	Hampton, Conn.....	Feb. 13, "
Gridirons and spider.....	A. and George Sizer.....	Meriden, Conn.....	Nov. 14, "
Heat, applying from lime, &c.....	Peter Wenn.....	Philadelphia, Pa....	Mar. 8, "
Heat, evolution and management of	Lovell Lewis.....	Lewistown, N. Y....	Mar. 2, "
Heating chocolate ingredients.....	G. W. Waite.....	Baltimore, Md.....	June 25, "
Heating water machines.....	D. B. Barnum.....	New Fairfield, Conn.	June 25, "
Kitchen ranges.....	George Johnson.....	Philadelphia, Pa....	May 23, "
Lamps.....	Isaiah Jennings.....	New York city.....	Sept. 22, "
Lamps, hanging, (antedated August 13, 1836).....	Alonzo Platt.....	Middletown, Conn..	Oct. 8, "
Lamps, light-house burner.....	Isaac Dunham.....	Bristol, Me.....	June 20, "
Lamps, reflecting.....	John C. Fletcher.....	Springfield, Ohio....	Mar. 30, "
Ovens.....	Samuel Pollard.....	Orono, Maine.....	Feb. 3, "
Ovens.....	William H. Akins.....	Berkshire, N. Y....	June 2, "
Ovens, baker.....	Eben B. Strong.....	Buffalo, N. Y.....	April 11, "
Ovens, heating by anthracite.....	F. C. Treadwell.....	Brooklyn, N. Y....	June 16, "
Ovens, heating rooms.....	J. A. Pitts.....	Winthroe, Maine..	July 2, "
Ovens, reflecting.....	C. D. Van Allen.....	Pen Yan, N. Y.....	Mar. 31, "
Ovens, reflecting.....	Benjamin Ames.....	Ithica, N. Y.....	June 25, "
Smoke, consuming.....	Nathan Lockling.....	Sparta, N. Y.....	Mar. 4, "
Stoves.....	William M. Carmichael.	Hempstead, N. Y..	Mar. 23, "
Stoves.....	John H. B. Swanzy.....	Lynn, Mass.....	Mar. 30, "
Stoves.....	Frazier, Blanchard & Gill	New York.....	April 28, "
Stoves.....	Frederick A. Fickhardt..	Eaton, Pa.....	April 28, "
Stoves.....	Nathaniel Russell.....	Waterville, Maine..	May 14, "
Stoves.....	Howell Parmelee.....	Waterville, N. Y..	July 2, "
Stoves, air-tight.....	Isaac Orr.....	Washington, D. C..	Jan. 20, "
Stoves, air warmer.....	J. J. Heintzelman.....	Philadelphia, Pa....	June 16, "
Stoves, anthracite coal.....	Adrian Jones.....	Hartford, Conn....	June 2, "
Stoves for carriages.....	Alexander McWilliams..	Washington, D. C..	April 21, "
Stoves, conical.....	Robert Robertson.....	Albany, N. Y.....	June 16, "
Stoves, and fire place.....	C. Hendricks and W. Elwell.....	Gardner, Maine....	Feb. 25, "
Stoves, and fire place.....	Jordan L. Mott.....	New York.....	Oct. 11, "
Stoves, foot.....	Ezekiel Daboll.....	Canaan, Conn.....	July 1, "
Stoves, Franklin.....	John Harryman.....	Haverhill, Mass....	Sept. 29, "
Stoves, parlor.....	Beriah Douglas.....	Albany, N. Y.....	June 30, "
Stove pipes.....	Ezra Ripley.....	Albany, N. Y.....	Jan. 23, "
Stoves, rotary caps.....	Maynard French.....	Albany, N. Y.....	Mar. 2, "
Stoves, ventilating.....	Clement Woodward.....	Washington, D. C..	July 2, "
Ventilating and supplying houses with cold or hot air.....	R. Mayo and Robt. Mills	Washington, D. C..	Oct. 24, "



CLASS VI.—STEAM AND GAS ENGINES, including Boilers and Furnaces therefor, and parts thereof.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Boilers, steam .....	J. W. and E. Strange .....	Taunton, Mass. ....	Sept. 29, 1836
Boilers, steam, purifying water...	Moody Park .....	Madison, Indiana...	Oct. 4, "
Spark catcher .....	A. McDonough .....	Philadelphia, Pa. ....	Feb. 17, "
Spark catcher .....	Francis Milo .....	New York city .....	Feb. 26, "
Spark catcher .....	William Shultz .....	Philadelphia, Pa. ....	Mar. 31, "
Spark catcher .....	James F. Curtis .....	Boston, Mass. ....	Apr. 13, "
Spark catcher .....	A. Whitney & L. L. Burr .....	Albany, N. Y. ....	May 23, "
Spark catcher .....	Gabriel Winter .....	Donaldsonville, Pa. ..	July 1, "
Steam engine .....	A. S. Dawley .....	Boston, Mass. ....	May 23, "
Steam engine, safety .....	Edward D. Tippet .....	Washington, D. C. ..	Nov. 23, "
Steam engine, locomotive .....	H. R. Campbell .....	N. L. Philad'a, Pa. ..	Feb. 5, "
Steam engine, locomotive, for inclined planes, (ante dated July 13, 1836) .....	John Ruggles .....	Thomaston, Maine ..	July 28, "
Steam engine, locomotive and rail roads .....	Isaac W. Edgar .....	Wayne county, Ohio ..	July 2, "
Steam engine, rotary .....	Aaron Clark .....	Bangor, Maine .....	Feb. 16, "
Steam engine, rotary .....	David Ulam .....	Greenburg, Pa. ....	Mar. 23, "
Steam engine, rotary .....	Shepherd Whitman .....	New Albany, Ind. ....	June 25, "
Steam engine, rotary .....	F. Carpenter .....	Cazenovia, N. Y. ....	July 2, "
Steam engine, rotary reacting .....	John Ingham .....	Apulia, N. Y. ....	Nov. 28, "
Steam, generating .....	Job Carr .....	Springborough, Ohio ..	Mar. 12, "
Steam, generating .....	John Ames .....	Springfield, Mass. ....	Mar. 12, "
Steam, generating .....	E. Nott .....	Schenectady, N. Y. ....	Mar. 19, "
Steam, generating .....	J. Jennings .....	New York .....	July 1, "
Steam, generating .....	M. W. Baldwin .....	Philadelphia, Pa. ....	Oct. 15, "
Valve, puppet, raising, &c. ....	Wm. Duff & T. Murphy .....	Baltimore, Md. ....	Feb. 17, "
Valve, slide .....	A. McCausland, Jr. ....	Philadelphia, Pa. ....	Feb. 10, "

CLASS VII.—NAVIGATION and Maritime Implements, comprising all Vessels for conveyance on water, their construction, rigging and propulsion, Diving Dresses, Life Preservers, &c.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Anchor, cast iron .....	James S. Stoddard .....	Palmyra, N. Y. ....	July 2, 1836
Blocks, sheaves of .....	Cyrus Alger .....	Boston, Mass. ....	July 1, "
Blocks, ships', cutting sheaves, &c. ....	Thomas Blanchard .....	New York .....	Aug. 31, "
Blocks, ships', and dead eyes, &c. ....	Thomas Blanchard .....	New York .....	Aug. 10, "
Blocks, ships', finishing wooden sheaves .....	Thomas Blanchard .....	New York .....	Aug. 1, "
Blocks, ships', forming end pieces &c. ....	Thomas Blanchard .....	New York .....	Aug. 10, "
Blocks, ships', forming or shaping cheeks, &c. ....	Thomas Blanchard .....	New York .....	Aug. 31, "
Blocks, ships', mortising and boring, &c. ....	Thomas Blanchard .....	New York .....	Aug. 10, "
Blocks, ships', riveting plank, &c. ....	Thomas Blanchard .....	New York .....	Aug. 10, "
Blocks, ships', rounding edges, &c. ....	Thomas Blanchard .....	New York .....	Aug. 10, "
Blocks, ships', tackle, counter-sinking, &c. ....	Thomas Blanchard .....	New York .....	Aug. 31, "
Boats, passing over dams .....	Stephen Underwood .....	Bath, N. H. ....	Mar. 19, "
Boats, and rafts, passing, &c. ....	Benning Sanbord .....	Lyman, N. H. ....	Apr. 11, "
Boats to be used under water .....	Edward Fitzpatrick .....	Mount Morris, N. Y. ..	Feb. 12, "
Capstan .....	Andrew Morse .....	Boston, Mass. ....	Mar. 12, "
Constructing vessels .....	Daniel Gerrish .....	Boston, Mass. ....	July 2, "
Dead eyes, for cutting and boring lanyard scores .....	Thomas Blanchard .....	New York .....	Aug. 10, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Ice breaker .....	Michael Freytag .....	Philadelphia, Pa....	July 2, 1836
Ice cutting machine.....	Samuel Trask .....	Hallowell, Maine....	Apr. 21, "
Propelling boats, &c.....	Gideon Hotchkiss .....	Windsor, N. Y.....	June 2, "
Propelling boats .....	Philander Noble .....	Westfield, Mass....	Jan. 20, "
Propelling paddles for boats.....	John Cochran .....	Baltimore, Md.....	Apr. 28, "
Raising vessels .....	Tobias Cook .....	Scituate, Mass.....	June 30, "
Rudders .....	Samuel Kepner .....	Harrisburg, Pa.....	Mar. 4, "
Sails for ships, &c. making and furling.....	John Wade .....	Boston, Mass.....	Dec. 6, "
Thimbles, ships' .....	Prentiss White .....	Yarmouth, Mass....	July 2, "

CLASS VIII.—MATHEMATICAL, *Philosophical and Optical Instruments, including Clocks, Chronometers, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Clocks .....	Joseph Ives .....	Bristol, Conn.....	July 1, 1836
Compass, quadrant, and protractor	Francis Whiteley .....	Standardsville, Va..	Dec. 6, "
Compass, surveying .....	Nathan Basset .....	Wilmington, Del...	June 28, "
Distance, measuring .....	Rufus Porter .....	Billerica, Mass.....	June 11, "
Glasses, for spectacles.....	Isaac Schnaitman .....	N. L. Philadel'a, Pa	Feb. 20, "
Maps, charts, &c., apparatus for exhibition .....	Nathaniel K. Lombard..	Boston, Mass.....	Oct. 27, "
Spring for clocks .....	James S. Ives .....	Bristol, Conn.....	May 23, "
Time piece.....	William Pardie.....	Poughkeepsie, N.Y.	Feb. 20, "
True meridian, finding, &c.....	William A. Burt.....	Mount Vernon, Mich	Feb. 25, "

CLASS IX.—CIVIL ENGINEERING and *Architecture, comprising works on Rail and Common Roads, Bridges, Canals, Wharves, Docks, Rivers, Wiers, Dams, and other Internal Improvements, Buildings, Roofs, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bridges, frame .....	Stephen H. Long .....	U. S. Topograph Eng	Jan. 23, 1836
Buildings, constructing.....	Lewis Knapp.....	New York.....	June 28, "
Buildings, stores, &c. ....	Isaac Knight.....	Baltimore, Md.....	May 23, "
Canals, locks.....	David Wilkinson .....	Cahoes, N. Y.....	May 14, "
Canals, locks, gate.....	Valentine Brown.....	Clifton Park, N. Y..	May 14, "
Canals, locks, indicator.....	Valentine Brown.....	Clifton Park, N. Y..	May 14, "
Dock, dry .....	J. Houston, A. Hinman and J. Ingraham.....	Buffalo, N. Y.....	June 22, "
Dock, hydraulic .....	Zebedee Ring.....	New York.....	Feb. 13, "
Drilling stone.....	Andrew Turney .....	Reading, Conn.....	Mar. 3, "
Excavating from rivers.....	Sylvanus Russell.....	Buffalo, N. Y.....	Apr. 28, "
Marsh drainer.....	Jean Blanc.....	New Orleans, La...	July 2, "
Railroad .....	Nathan Reed .....	Belfast, Maine.....	Mar. 31, "
Railroad plates, jointing .....	A. M. McCaine.....	Montgomery, Ala...	Mar. 31, "
Railroad, turn out.....	John Talbot.....	Portsmouth, Va....	Oct. 11, "
Roads, constructing.....	John S. Williams.....	Fulton, Ohio.....	July 1, "
Sewer, of hydraulic cement.....	Obadiah Parker.....	New York city.....	July 2, "
Tunnelling rivers .....	J. B. Bucklin & J. Jacobs	West Troy N. Y..	July 11, "
Wharves, piers, &c., constructing	John G. Pray.....	Brooklyn, N. Y....	Jan. 6, "
Window frieze and covering.....	William Woolley.....	New York.....	July 1, "



CLASS X.—LAND CONVEYANCE, comprising Carriages, Cars, and other Vehicles used on roads, and parts thereof.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Axletrees for carriages and cars..	Spencer Coleman.....	Mount Pleasant, Va.	Mar. 2, 1836
Breakers, cylindrical, for retarding machinery.....	Smith Cram.....	New York.....	June 2, "
Car, door fastening.....	John K. Smith.....	Port Clinton, Pa....	Feb. 12, "
Car, railroad.....	J. Davis and W. Ashdown	Baltimore, Md.....	Mar. 4, "
Car, railroad, attaching.....	L. Pickering & J. Lightner	Boston, Mass.....	June 28, "
Car, taking over elevators.....	Smith Cram.....	New York city.....	June 11, "
Springs, carriage.....	Newel Hungerford.....	Ithica, N. Y.....	Mar. 31, "
Sulkey seat.....	O. H. Capron and G. Barton, jr.....	Shaftsbury, Vt.....	Jan. 23, "
Tire for wheels.....	James H. Rogers.....	Mount Morris, N. Y.	Feb. 17, "
Wagon, coaches, and breaks for..	Henry West.....	Quincy, Mass.....	Sept. 29, "
Wagon, hanging.....	Henry Mellish.....	Walpole, N. Y.....	Jan. 11, "
Wagon, tilting.....	Stephen Beebe.....	Norwich, Conn.....	June 22, "
Wheels, boxes fitting to.....	J. & C. Putnam.....	Hallowell, Maine...	April 28, "
Wheels, cart and carriage.....	William Woodbridge...	Kennebec, Maine...	May 17, "
Wheels, confining carriage to.....	Clark Force.....	Baltimore, Md.....	April 28, "
Wheels, horse detaching.....	Philip T. Share.....	Baltimore, Md.....	Mar. 18, "
Wheel hubs.....	John Atherton.....	Philadelphia, Pa....	June 2, "

CLASS XI.—HYDRAULICS AND PNEUMATICS, including Water-wheels, Windmills, and other implements operated on by air or water, or employed in raising and delivery of fluids.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Blow-pipe for furnace.....	J. Barker.....	Baltimore, Md.....	Feb. 12, 1836
Faucets, molasses.....	Charles W. Peckham....	New Haven, Conn..	Feb. 10, "
Gate, flume.....	Harvey Frink.....	Chautauque co, N. Y.	Feb. 25, "
Hydrants.....	S. T. Walker.....	Baltimore, Md.....	July 1, "
Hydrants.....	S. T. Walker.....	Baltimore, Md.....	July 2, "
Hydrants.....	David Horne.....	Baltimore, Md.....	Mar. 31, "
Hydrostatic press.....	Thomas Baxter.....	Petersburg, Va.....	April 13, "
Pumps.....	J. F. Walker.....	Easton, Pa.....	May 6, "
Pumps.....	Abner T. Mixwell.....	Oxford, N. J.....	June 30, "
Pump, forcing, double.....	Levi Newton.....	Alexander, N. Y....	Mar. 8, "
Pump, forcing, double.....	John G. White.....	Dryden, N. Y.....	July 1, "
Pump, forcing.....	Benjamin Egbert.....	Lansing, N. Y.....	Jan. 23, "
Pump, forcing.....	W. W. Lesner.....	Venice, N. Y.....	Mar. 12, "
Pump, forcing.....	John F. Rodgers.....	Waterford, N. Y....	Mar. 30, "
Pump, forcing.....	Nathan Chapin.....	Penn Yan, N. Y....	Mar. 30, "
Pump, frictionless.....	Edward Whitfield.....	New York.....	June 2, "
Pump, frictionless.....	Charles V. Card.....	New Bedford, Mass.	Nov. 26, "
Pump, suction.....	Thomas C. Barton.....	Washington, N. J..	Feb. 20, "
Pump, vibrating.....	Sampson Davis.....	Derby, Vt.....	Feb. 25, "
Raising water.....	Joseph Turner.....	Poland, Maine.....	May 6, "
Raising water.....	Jesse C. Wood.....	Ephrata, N. Y.....	June 22, "
Raising water by weight.....	David Hess.....	Shepardstown, Va..	July 1, "
Water, applying.....	J. Hinds, M. B. Ball, and S. Pike.....	Troy, N. Y.....	May 14, "
Water, conveying.....	Samuel Hant.....	Baltimore, Md.....	Mar. 31, "
Water-wheel.....	William L. Elgar.....	Winchester, N. H..	Feb. 10, "
Water-wheel.....	Frederick Wingate.....	Augusta, Maine....	Mar. 4, "
Water-wheel.....	Abraham Straub.....	Milton, Pa.....	Mar. 12, "
Water-wheel.....	Carey S. Mercer.....	Franklin, Md.....	Mar. 30, "
Water-wheel.....	J. T. Towne.....	Mount Morris, N. Y.	April 11, "
Water-wheel.....	William Hitchcock.....	Spencer, N. Y.....	May 23, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Water-wheel .....	Henry Allen.....	Fayetteville, Tenn..	June 2, 1836
Water-wheel .....	Orson Waldo.....	Newark, N. Y.....	June 25, "
Water-wheel .....	Charles Kenzie.....	Troy, N. Y.....	July 1, "
Water-wheel .....	Samuel Garrett.....	Loudonville, Ohio..	July 2, "
Water-wheel .....	William F. Brown.....	Augusta, Maine....	July 2, "
Water-wheel, propelling.....	Aretas A. Wilder.....	Warsaw, N. Y.....	Mar. 8, "
Water-wheel, &c., regulating the motion of.....	Nathan Scholfield.....	Norwich, Conn.....	May 17, "
Wells, covers of.....	Levi Kidder.....	New York city.....	Jan. 15, "
Wind wheel.....	Job Wilbur.....	Fall River, Mass...	Mar. 30, "

CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, *as applied to Pressing, Weighing, Raising and Moving Weights.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Balance .....	Jirah Vaughn.....	Rutland, Vt.....	May 6, 1836
Balance, platform .....	C. P. Ladd .....	Strasburg, Vt.....	May 17, "
Balance, platform.....	James M. Peck.....	Lyndon, Vt.....	May 23, "
Balance, platform.....	John Horton.....	Madrid, N. Y.....	July 2, "
Condensing cotton .....	Arlon Man.....	Smithfield, R. I....	April 28, "
Crane.....	Elias Marsh.....	Oswego, N. Y.....	Feb. 12, "
Crane.....	Gilbert Sherwood.....	Erie, Pa.....	June 30, "
Lever power, sawing, &c. by ....	Jeremiah Walker.....	Phillips, Maine....	Feb. 25, "
Packing flour.....	Jonathan F. Barrett.....	Granville, N. Y....	Jan. 23, "
Packing screw, inverted.....	Stephen Terry.....	Decatur, Geo.....	June 11, "
Packing tobacco.....	J. B. Allen.....	Richmond, Va.....	Jan. 15, "
Press, cotton.....	J. Mitchell.....	Rutherford, Tenn...	Mar. 12, "
Press, hay.....	A. R. Chamberlin and A. Clefin .....	Richmond, Va.....	Mar. 30, "
Press, lever.....	H. G. Guyon.....	New York.....	July 2, "
Press, tobacco.....	A. M. McLean.....	Russellville, Ky....	Feb. 5, "

CLASS XIII.—GRINDING MILLS, *and Mill-gearing, containing Grain Mills, Mechanical Movements and Horse-Powers, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Chocolate, grinding .....	Geo. W. Waite.....	Baltimore, Md.....	June 25, 1836
Chocolate, moulding .....	James Mathews .....	Baltimore, Md.....	June 25, "
Cider mill.....	Christian Sheaffer .....	Lebanon, Pa.....	Mar. 19, "
Cider mill.....	Elias Jenkins .....	Harmony, Pa.....	May 17, "
Coffee mill.....	C. W. Peckham.....	New Haven, Ct....	April 13, "
Cooler, flour .....	Josiah Pope.....	Windham, Me....	Feb. 5, "
Grist mill .....	W. and J. McCreight ...	Winnsborough, S.C.	Feb. 5, "
Grist mill.....	Oliver Wyman .....	Watertown, Mass..	July 1, "
Grist mill, for cutting .....	William Gerrish.....	Portsmouth, N. H..	Jan. 11, "
Horse power .....	Daniel Fitzgerald .....	New York city.....	Oct. 19, "
Horse power .....	Samuel Newton .....	Dayton, Ohio.....	Jan. 20, "
Horse power .....	Dudley Marvin.....	New York city.....	Feb. 5, "
Horse power .....	Joseph Musten .....	Franklin county, Vt.	Feb. 12, "
Horse power .....	Richard Skinner .....	Williamson, N. Y..	Mar. 31, "
Horse power.....	Amos Adams .....	Augusta, Maine....	May 6, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Horse power .....	Isaac Straub .....	Lewistown, Pa.....	May 14, 1836
Horse power .....	C. Coster and D. Penny- packer.....	Upper Providence, Penn .....	May 23, "
Horse power .....	Rufus Porter .....	Billerica, Mass.....	June 11, "
Horse power .....	Wm. Whitman.....	Haverhill, N. H....	June 20, "
Horse power .....	John Abbott .....	S. Reading, Mass..	June 30, "
Horse power .....	Charles G. Gilbert.....	Leeds, Maine.....	July 2, "
Horse power .....	Daniel Fitzgerald .....	New York city.....	Oct. 19, "
Horse power, endless chain, &c..	O. Badger.....	Cooperstown, Conn.	Oct. 15, "
Mill.....	John Harman, jr .....	New York.....	Mar. 30, "
Mill, metallic.....	Joseph C. Gentry .....	Dayton, Ohio.....	Mar. 18, "
Mill stones, cooling .....	Autin Taylor.....	Littleton, N. H....	Mar. 31, "
Mill stones, picks.....	Samuel Etheridge.....	Tecumseh, Mich....	Mar. 2, "
Mill wheel, dresser .....	John Turk .....	Columbus, Pa.....	July 1, "
Motion, reciprocating, &c.....	Benjamin Babbet .....	Bangor, Maine.....	Oct. 11, "
Power, endless chain propeller ...	Lewis Chevrier .....	Philadelphia, Pa....	July 11, "
Power, alternate motion, by con- traction and expansion of metals	Hazard Knowles .....	Hartford, Conn.....	Sept. 8, "
Power; self-motive.....	J. J. Giraud.....	Baltimore, Md .....	Mar. 31, "
Regulating speed, wheel for grist mills.....	S. H. Freeman .....	Cecilton, Md .....	May 17, "

**CLASS XIV.—LUMBER,** *including Machines and Tools for Preparing and Manufacturing; such as Sawing, Planing, Mortising, Shingle and Stave, Carpenters and Coopers' Implements.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bit stocks.....	Jeremy Taylor.....	Hebron, Conn.....	June 30, 1836
Boring wood.....	John B. Pell.....	New York.....	Mar. 2, "
Casks, machine.....	Sumner King.....	Suffield, Conn.....	Mar. 23, "
Casks and barrel headings.....	Hiram Andrews.....	Canaan, Conn.....	Mar. 2, "
Drawing knife.....	Edward Richards.....	Hingham, Mass....	June 28, "
Dye woods, cutting and shaving..	B. Swift.....	Washington, N. Y.	Aug. 10, "
Fence pickets, cutting.....	J. Tichenor, S. Goodrich, and G. A. Hart.....	Ithica, N. Y.....	June 22, "
Gimlet, forging.....	De Grass Fowler.....	Wallingford, Conn.	July 2, "
Gimlet, &c.....	William M. Fowler.....	N. Brandford, Conn.	April 28, "
Joint, of wood work .....	S. C. Batchelor and N. S. Thomas .....	Watertown, N. Y..	Mar. 30, "
Lathe .....	Enos and Nelson Avord.	Westfield, Mass....	Oct. 12, "
Lathe, gripe chuck for.....	David Peeler.....	Boston, Mass.....	Mar. 31, "
Laths, machine.....	Elihu Smith.....	Ithica, N. Y.....	April 28, "
Mortising machine.....	George Page .....	Keene, N. H.....	Mar. 18, "
Mortising machine.....	Erastus M. Shaw.....	Wilbraham, Mass..	Mar. 23, "
Mortising machine.....	J. C. Channell.....	Dunstable, N. H....	June 16, "
Mortising machine.....	Samuel E. Babcock.....	Oldstead, N. H....	June 16, "
Mortising machine.....	John Hawkins.....	Stockbridge, Mass..	June 20, "
Mortising machine.....	David Clark.....	Brooklyn, Conn....	Sept. 14, "
Mortising and boring machine....	George Page .....	Keene, N. H.....	Mar. 13, "
Mortising timber.....	George Page .....	Keene, N. H.....	Mar. 21, "
Pegs, shoe.....	R. H. Thompson.....	Rochester, N. Y....	Mar. 23, "
Plane.....	J. T. Jones .....	Philadelphia, Pa....	May 14, "
Plane, revolving .....	Lemuel Hedge.....	Brattleboro', Vt....	June 28, "
Planing machine.....	Melzer Tuells.....	Milo, N. Y.....	Feb. 10, "
Planing machine.....	Lorrain Curtis.....	Sherburne, N. Y....	June 16, "
Planing machine.....	P. M. Martz.....	Marion county, Ia..	June 25, "
Planing machine.....	Ira Gay.....	Dunstable, N. H....	June 25, "
Planing machine.....	William Woodworth....	New York.....	Nov. 15, "
Saw belt.....	William Carey.....	Poughkeepsie, N. Y.	Feb. 17, "
Saw belt, for timber.....	Benjamin Barker .....	Ellsworth, Me.....	Jan. 6, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Saw for felling trees.....	Walter Hunt.....	New York city.....	Jan. 6, 1836
Saw, rotary.....	Robert S. Thomas.....	Rockingham, N. C.	July 1, "
Saw, straightening.....	E. Rathbun and W. Tinker.....	Conneaut, Ohio.....	July 1, "
Sawing machine.....	Joseph Peavy.....	Levant, Maine.....	May 14, "
Sawing timber.....	Josluua Webb.....	Brooklyn, Conn.....	May 14, "
Sawing wood.....	Joseph Pinno, jr.....	Hanover, N. H.....	April 21, "
Saw-mills.....	G. W. Black.....	Montgomery co., Te.	Feb. 3, "
Saw-mills.....	David Washington.....	Peru, Mass.....	Feb. 25, "
Saw-mills.....	Isaac Read.....	Marshfield, Mass..	Mar. 2, "
Saw-mills.....	Daniel Gerrish.....	Boston, Mass.....	April 11, "
Saw-mills.....	James Sanders.....	Alleghany co., Md.	April 28, "
Saw-mills.....	W. J. McGhee.....	Columbus, Geo.....	May 14, "
Saw-mills.....	T. B. Naylor.....	Jonesville, N. C....	June 2, "
Saw-mills.....	Simon Willard.....	New York city.....	June 30, "
Saw-mills.....	Samuel Gondy.....	Greensburg, Ky.....	July 2, "
Saw-mill, blocks for.....	Erastus Rathburn.....	Conneaut, Ohio.....	April 11, "
Saw-mill, crank.....	Benjamin F. Snyder....	Elmira, N. Y.....	Sept. 29, "
Saw-mill, cross-cutting.....	Rufus Riker.....	Dexter, Maine.....	Feb. 20, "
Saw-mill, dogs.....	Martin Rich.....	Ithica, N. Y.....	Feb. 25, "
Saw-mill, dogs.....	Phineas Bennett.....	Ithica, N. Y.....	Feb. 25, "
Saw-mill, endless side chain, carriages for.....	James Murray.....	Baltimore, Md.....	Oct. 11, "
Saw-mill, saw.....	B. K. Barker.....	Johnsbury, N. Y....	Feb. 5, "
Screws, cutting wooden.....	Joseph Peavy.....	Levant, Mo.....	Jan. 6, "
Shingles, dressing.....	N. P. Hawk and J. Keyes	Union, N. Y.....	April 21, "
Shingle machine.....	Tunis J. Burhyte.....	Barton, N. Y.....	July 1, "
Shingles, sawing.....	Jonathan Hobbs, jr.....	Falmouth, Maine...	Sept. 14, "
Slitting timber.....	R. Beale and M. Bucklin.	Grafton, N. H.....	May 23, "
Staves, sawing.....	Charles M. Keller.....	Washington, D. C.	June 30, "
Staves, sawing.....	A. Bard and S. Heywood	Lunenburg, Mass..	Feb. 20, "
Staves, sawing for barrels.....	Cyrus McGregor.....	Newport, N. H.....	July 2, "
Veneers, cutting.....	James Hamilton.....	New York city.....	Nov. 10, "
Veneers, laying on ogee and other mouldings.....	John Soule.....	New Bedford, Mass.	Aug. 31, "

**CLASS XV.—STONE AND CLAY MANUFACTURES, including Machines for Pottery, Glass making, Brick making, Dressing and Preparing Stone, Cements, and other Building Materials.**

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Brick machine.....	John Moffatt.....	Buffalo, N. Y.....	Mar. 8, 1836
Brick machine.....	Nathaniel Adams.....	Newburg, N. Y....	April 13, "
Brick machine.....	Gooding Halloway.....	Montgomery co., Pa.	April 21, "
Brick machine.....	Calvin Waterman.....	Bath, Maine.....	July 2, "
Brick moulding.....	James Coppuck.....	Louisville, Ky.....	July 1, "
Brick press.....	Phineas Ball.....	Mount Vernon, O..	Mar. 2, "
Glass cases.....	Thomas W. Whitley....	Paterson, N. J.....	April 21, "
Granite, cutting and dressing.....	John D. Buzzell.....	Cape Elizabeth, Me.	June 2, "
Granite, hammering and dressing	William Morse.....	Corinna, Maine.....	Sept. 5, "
Gypsum, applied to cisterns.....	J. Flint and Clark Mills.	New York city.....	Mar. 4, "
Moulding pottery.....	J. C. Mendall and R. B. Ricketts.....	Masonville, Ky.....	June 30, "
Stone, cutting.....	J. and J. Sutton.....	Reading, N. Y.....	June 20, "
Stone, cutting and planing.....	A. Clark and C. H. Boynton.....	West Stockbridge, Mass.....	June 20, "



CLASS XVI.—LEATHER, *including Tanning and Dressing, Manufacture of Boots, Shoes, Saddlery, Harness, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Boots, crimping, clamps for.....	E. G. Poméroy.....	Newark, Ohio.....	Oct. 4, 1853
Boots, crimping, cramp for.....	Hubbard L. Pierce.....	St. Jolinsbury, Vt..	June 25, "
Boots, crimping legs.....	William Gerrish.....	Poland, Maine.....	Feb. 10, "
Boots, machine for turning boot legs.....	Thomas N. Saddler.....	Spencer, Mass.....	Nov. 8, "
Boots, trees.....	M. Matthews.....	Wayne, Ohio.....	Feb. 25, "
Boots, tucking machine.....	Sherburne C. Blodget...	Rowley, Mass.....	June 11, "
Boots, turning.....	Peletiah Stevens.....	Stoughton, Mass...	Mar. 4, "
Boot and shoe soles, cutting.....	Jonathan Hill.....	Billerica, Mass.....	Mar. 31, "
Glazed leather.....	E. G. Adams.....	Decatur, Ga.....	June 30, "
Harness, horse collars.....	John Hopkinson.....	Warren county, O..	Jan. 23, "
Harness, horse collars, forming...	G. Warner and Robinson	Canajoharie, N. Y..	June 22, "
Harness, nets, fly for horses.....	Henry Korn.....	Philadelphia, Pa....	July 2, "
Harness, pad, elastic water proof.	A. Deitz.....	Albany N. Y.....	Oct. 14, "
Harness, riveting.....	William Dukehart.....	Baltimore, Md.....	Mar. 30, "
Hides, unhairing.....	James Banks.....	Dixmont, Maine...	June 30, "
Mail bags, bolt for.....	Ira Atkins.....	Hanover, N. H.....	Feb. 17, "
Rolling leather.....	J. M. Laughlin & H. Hill	Sunderland, Vt.....	April 28, "
Saddles.....	Benjamin Kraft.....	Reading, Pa.....	June 20, "
Saddles.....	Otho W. S. Callihan.....	Staunton, Va.....	July 1, "
Saddles and collars.....	Ebenezer Hale.....	New York, N. Y....	Jan. 20, "
Saddles, elastic.....	William McCormick....	Bath county, Ky....	June 20, "
Saddles, ladies'.....	M. Jenkins.....	Attica, N. Y.....	July 1, "
Saddles, side.....	E. Bridewell.....	Bardstown, Ky....	Nov. 26, "
Saddles, spring.....	Peter Crim.....	Waynestown, Pa....	April 28, "
Saddles, spring.....	William Duchman.....	Morgantown, Pa....	Aug. 31, "
Saddles, trees.....	Andrew R. McBride....	Williamson co., Te.	Feb. 5, "
Shaving leather.....	Herkimer Johnson.....	Brooklyn, Conn....	June 16, "
Shoe making machine.....	J. Hall.....	N. Bridgewater, Mass	May 6, "
Shoe, over.....	Daniel H. Bond.....	Canterbury, Conn..	June 30, "
Tanning.....	Henry Lochier.....	Lancaster, Pa.....	Mar. 18, "
Tanning.....	Laban Emery.....	New York.....	Mar. 17, "
Tanning.....	Simeon Heath.....	Pike, N. Y.....	May 23, "
Tanning, bark for.....	Daniel Williams.....	Boston, Mass.....	Feb. 5, "
Trunks, travelling.....	Washington Sweetzer...	Portsmouth, N. H..	July 1, "
Trunks, valises, &c.....	James W. Noble.....	Pittsfield, Mass....	Jan. 15, "
Trunks, valises, &c.....	William Brown.....	Brooklyn, N. Y....	July 1, "

CLASS XVII.—HOUSEHOLD FURNITURE, *Machines and Implements for Domestic Purposes including Washing Machines, Bread and Cracker Machines, Feather Dressing, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bed-bug, destroying.....	Britain Garrand.....	Marysville, Tenn...	Mar. 12, 1836
Beds, spring, spiral.....	M. F. Moody and B. Eastman.....	Northampton, Mass.	April 13, "
Bedsteads.....	Jonas Maguire.....	Philadelphia, Pa....	Jan. 15, "
Bedsteads.....	Christian Kniseley.....	Meadville, Pa.....	June 16, "
Bedstead, cot.....	Samuel Clarke.....	New York.....	Mar. 23, "
Bedstead fastenings.....	Ira McLaughlin.....	Sunderland, Vt.....	April 28, "
Chairs, easy.....	Andrew Wood.....	Charlestown, Va....	June 28, "
Crackers and biscuit, cutting.....	Eph. Treadwell.....	New York.....	May 18, "
Crackers, cutting and rolling.....	W. R. Nivens.....	New York.....	Mar. 2, "
Cutting apples, and paring.....	John W. Hatcher.....	Bedford county, Va.	Feb. 3, "
Cutting meat.....	J. Masser and S. Smith..	Megentown, Pa....	June 2, "
Cutting sausage meat.....	Ambrose Henkel.....	New Market, Va....	Feb. 13, "
Cutting vegetables.....	Austin H. Robbins.....	Denmark, N. Y....	May 6, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Cutting vegetables.....	Henry Mellish .....	Walpole, N. H.....	June 25, 1836
Dough machine.....	D. and T. Shackford....	Westbrook, Conn..	Mar. 2, "
Feathers, cleaning.....	Daniel K. Hall .....	New York.....	Feb. 12, "
Feathers, dressing .....	Samuel Keplinger.....	Baltimore, Md.....	Feb. 12, "
Feathers, dressing .....	Elam Wilbur.....	Geneva, N. Y.....	Mar. 18, "
Feathers, dressing .....	Billy and Alanson Todd..	Marietta, Ohio .....	May 6, "
Feathers, dressing .....	George Reynolds .....	East Hartford, Ct ..	May 23, "
Feathers, dressing .....	Benton P. Coston.....	Philadelphia, Pa....	June 28, "
Feathers, dressing.....	F. P. Knowlton .....	Clermont, N. H.....	July 2, "
Feathers, renovator.....	J. W. Post and R. Collier	Baltimore, Md.....	Mar. 2, "
Mattresses, bolsters, &c.....	A. Salisbury and J. Uram	Troy, N. Y.....	July 1, "
Sacking bottom.....	L. L. Wells.....	Middletown, Conn..	April 13, "
Washing machine .....	Joab H. Hubbard .....	Bloomfield, Conn..	Jan. 6, "
Washing machine .....	Luther Davis.....	Norwich, Conn.....	Feb. 12, "
Washing machine .....	John S. Geer.....	Norwich, Conn.....	Mar. 2, "
Washing machine .....	Albion P. Arnold.....	Readfield, Maine...	Mar. 12, "
Washing machine .....	E. Y. Watson.....	Albany, N. Y.....	Mar. 23, "
Washing machine .....	Charles Merriman.....	Middletown, Conn..	April 21, "
Washing machine .....	Henry Souder.....	Strasburg, Pa.....	April 21, "
Washing machine .....	L. R. Prince .....	Beverly, Mass.....	May 14, "
Washing machine .....	Amory Davidson .....	Littleton, " .....	June 11, "
Washing machine .....	Amos Larcum.....	Troy, N. Y.....	June 16, "
Washing machine .....	William Newton .....	Warren county, O..	July 1, "
Washing machine .....	James H. Little .....	Skaneateles, N. Y...	July 2, "
Water, pressing from clothes.....	Caleb Angevine.....	New York city.....	Feb. 25, "

CLASS XVIII.—ARTS, POLITE, FINE, AND ORNAMENTAL, *including Music, Painting, Sculpture, Engraving, Books, Paper, Printing, Binding, Jewelry, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Pencil case and pen.....	Henry Withers.....	New York city.....	Mar. 19, 1836
Pencil, everpointed, open case....	Jacob J. Lounds.....	Philadelphia, Pa....	Sept. 22, "
Piano-forte .....	John Pethick.....	Mt. Morris, N. Y...	Feb. 12, "
Piano-forte .....	Isaac Clark .....	Cincinnati, Ohio....	Mar. 2, "
Piano-forte .....	H. Hartye.....	Baltimore, Md.....	Mar. 12, "
Printing press.....	J. Lemuel Kingsley.....	New York.....	Mar. 2, "
Printing press .....	Hezekiah Camp .....	Trenton, Ohio.....	Mar. 4, "
Printing press, hand.....	F. J. Austin.....	New York.....	Oct. 8, "
Printing press, power.....	Isaac Adams.....	Boston, Mass.....	Mar. 2, "

CLASS XIX.—FIRE-ARMS and *Implements of War, and parts thereof, including the Manufacture of Shot and Gunpowder.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Cannon for chain shot.....	Edwin Gordon.....	Hingham, Mass....	Feb. 17, 1836
Cannon, malleable iron.....	George W. Chapman ...	New York.....	June 16, "
Cannon, traverse board.....	William H. Bell.....	Washington, D. C..	May 14, "
Cannon, vent.....	John W. Cochran.....	Lowell, Mass.....	Mar. 23, "
Fire-arms .....	Samuel Colt.....	Hartford, Conn.....	Feb. 25, "
Lock, gun .....	Samuel Morrison .....	Milton, Pa.....	Feb. 10, "
Lock, gun and pistol .....	Johnson Marsh.....	East Dorset, Vt....	July 1, "
Pistols .....	B. and B. M. Darling...	Bellingham, Mass..	April 13, "
Stock, gun, lathe for.....	Abner Town.....	Woodbury, Vt.....	Feb. 25, "



CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, *including Trusses, Dental Instruments, Bathing Apparatus, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bones, setting, apparatus for.....	James H. Willard.....	Brown Elm, Ohio...	June 11, 1836
Lancet, revolving.....	T. H. Harrison.....	New Egypt, N. J....	June 20, "
Splints, for fractures.....	Enoch Thomas.....	New Athens, Ohio..	Mar. 8, "
Syringe, injecting.....	Joseph Ralph.....	New York.....	Feb. 25, "
Thigh, fractured, apparatus for...	Samuel Walston.....	Vincentown, N. J..	July 2, "
Tooth extractor.....	Moses R. Hanson.....	Bangor, Maine.....	Mar. 12, "
Truss.....	F. H. Newman.....	Huntsville, Ala....	Feb. 25, "
Truss.....	John W. Newson.....	New York.....	June 20, "
Truss for hernia.....	Wm. Adair.....	Pleasant Hill, Ky...	Feb. 17, "
Truss for hernia.....	Isaac Thompson.....	Brattleborough, Vt..	July 1, "

CLASS XXI.—WEARING APPAREL, *Articles for the Toilet, &c., including Instruments for Manufacturing.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Combs, metallic.....	H. Durell.....	New York.....	June 20, 1836
Combs, metallic.....	Richard A. Ives.....	Bristol, Conn.....	July 1, "
Corsets, rings, &c., grooves in ...	Charles Buckland.....	Middletown, Conn..	June 2, "
Razor case and sharpener.....	E. M. Pomeroy.....	Wallingsford, Conn.	Oct. 19, "
Shears, tailors'.....	Richard Fitzgerald.....	Elizabethtown, N. J.	April 28, "
Stock, for the neck, shaping.....	Thomas Goodrum.....	New York.....	July 1, "
Suspenders, manufacturing, gum-elastic.....	Ransom Warner.....	New York city.....	Mar. 18, "
Tailoring, art of.....	James Twisler, jr.....	Hagerstown, Md...	July 1, "

CLASS XXII.—MISCELLANEOUS.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Coffins, metallic.....	James A. Gray.....	Richmond, Va.....	June 11, 1836
Corn husks, slitting.....	Asa Barrett.....	Baltimore, Md.....	April 21, "
Traps, for rats, &c.....	Thomas Neill.....	Herkersville, Ohio..	Jan. 23, "



[ H. ]

## ALPHABETICAL LIST

OF PERSONS WHOSE PATENTS HAVE EXPIRED DURING THE YEAR 1850,  
WITH THEIR INVENTIONS OR DISCOVERIES AND CLASS.

PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Abbot, John .....	Horse power .....	XIII.
Adams, Amos .....	Horse power .....	XIII.
Adams, Nathaniel .....	Brick machine .....	XV.
Adams, E. G. ....	Glazed leather .....	XVI.
Adams, Isaac .....	Printing press, power .....	XVIII.
Adair, William .....	Truss for hernia .....	XX.
Akins, William H. ....	Ovens .....	V.
Allen, Henry .....	Cutting grass .....	I.
Allen, Adna .....	Hoe .....	I.
Allen, Henry .....	Seeding, cotton planter .....	I.
Alger, Cyrus .....	Blocks, sheaves of .....	VII.
Allen, Henry .....	Water wheel .....	XI.
Allen, J. B. ....	Packing tobacco .....	XII.
Ames, Benjamin .....	Ovens, reflecting .....	V.
Ames, John .....	Steam, generating .....	VI.
Andrews, Solomon .....	Lock, door .....	II.
Andrews, E. and S. Austin .....	Cooking stove .....	V.
Anderson, William .....	Grate, parlor .....	V.
Andrews, Hiram .....	Casks and barrel headings .....	XIV.
Angevine, Caleb .....	Water, pressing from clothes .....	XVII.
Arnold, J. and G. G. Bishop .....	Wool, hair, &c., forming web, &c. ....	III.
Arnold, Wm. A. ....	Cooking stove .....	V.
Arnold, Albion P. ....	Washing machine .....	XVII.
Atherton, John .....	Wheel hubs .....	X.
Atkins, Ira .....	Mail bags, bolt for .....	XVI.
Austin, F. J. ....	Printing press, hand .....	XVIII.
Averill, Isaac .....	Garden hoe .....	I.
Avery, William .....	Fuel, saw-dust .....	V.
Avord, Enos and Nelson .....	Lathe .....	XIV.
Baldwin, J. C. ....	Corn shelling .....	I.
Barnett, Ezra .....	Cutting scythe .....	I.
Baldwin, Cyrus B. ....	Hulling clover seed .....	I.
Barclay, Hugh .....	Thrashing machine .....	I.
Baily, J. and J. Sprinkle .....	Thrashing machine .....	I.
Bacon, Jonathan .....	Window spring, fastener .....	II.
Barnum, H. L. ....	Light and heat, generating .....	IV.
Barnum, D. B. ....	Heating water machines .....	V.
Baldwin, M. W. ....	Steam, generating .....	VI.
Bassett, Nathan .....	Compass, surveying .....	VIII.
Barker, J. ....	Blowpipe, for furnace .....	XI.
Baxter, Thomas .....	Hydrostatic press .....	XI.
Barton, Thomas C. ....	Pump, suction .....	XI.
Barrett, Jonathan F. ....	Packing flour .....	XII.
Badger, O. ....	Horse power, endless chain, &c. ....	XIII.
Babbet, Benjamin .....	Motion, reciprocating .....	XIII.
Batchelor and Thomas .....	Joint of wood work .....	XIV.
Babcock, Samuel E. ....	Mortising machine .....	XIV.
Barker, Benjamin .....	Saw, belt for timber .....	XIV.
Barker, B. K. ....	Saw-mill saw .....	XIV.
Bard & Heywood .....	Staves, sawing .....	XIV.
Banks, James .....	Hides, unhairing .....	XVI.
Barrett, Asa .....	Corn husks, slitting .....	XXII.
Belt, Chas. R. ....	Seeding, corn planter .....	I.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Beam, Michael .....	Seeding, cotton planter.....	I.
Bedee, Thomas.....	Thrashing Machine.....	I.
Beaumont, George .....	Thrashing Machine.....	I.
Beane, Jonathan.....	Winnowing Machine.....	I.
Bennett, James .....	Grates .....	V.
Beebe, Stephen .....	Wagon, tilting.....	X.
Bennett, Phineas.....	Saw-mills, dogs .....	XIV.
Beale & Bucklin.....	Slitting timber.....	XIV.
Bell, William H.....	Cannon, traverse board .....	XIX.
Blair, Henry, (colored man).....	Seeding, cotton planter.....	I.
Blake, P. and E. W.....	Locks, mortise.....	II.
Blackmar, John.....	Loom, harness for.....	III.
Blanchard, Thomas .....	Blocks, ship's, cutting sheaves, &c. ....	VII.
Blanchard, Thomas .....	Blocks, ship's, and dead eyes, &c. ....	VII.
Blanchard, Thomas .....	Blocks, ship's, finishing wooden sheaves ..	VII.
Blanchard, Thomas .....	Blocks, ship's, forming end pieces, &c. ....	VII.
Blanchard, Thomas .....	Blocks, ship's, forming or shaping, &c.....	VII.
Blanchard, Thomas .....	Blocks, ship's, mortising, &c. ....	VII.
Blanchard, Thomas .....	Blocks, ship's, riveting plank, &c.....	VII.
Blanchard, Thomas .....	Blocks, ship's, rounding edges, &c. ....	VII.
Blanchard, Thomas .....	Blocks, ship's, tackle, &c.....	VII.
Blanchard, Thomas .....	Dead eyes, &c. ....	VII.
Blanc, Jean.....	Marsh drainer .....	IX.
Black, G. W.....	Saw-mills .....	XIV.
Blodget, Sherburne C.....	Boots, tucking machine .....	XVI.
Boyden, Benjamin F.....	Hoe, cast iron .....	I.
Boyd, George C.....	Seeding, corn planter, &c.....	I.
Boyden, Wm. P.....	Iron and steel, making .....	II.
Boston & Bryant.....	Mineral water, soda fountain .....	IV.
Bond, Daniel H.....	Shoe, over.....	XVI.
Briggs & Carpenter.....	Cutting and thrashing.....	I.
Brown, Eleazer.....	Thrashing machine.....	I.
Brainard, M. M.....	Gouges, making.....	II.
Brockway, J.....	Spoons, silver, mill.....	II.
Brooks, Adam.....	Silk, winding .....	III.
Brooks, Adam.....	Silk, winding, &c.....	III.
Brayton, William P.....	Spinning cotton.....	III.
Brown, Valentine.....	Canals, locks, gates .....	IX.
Brown, Valentine.....	Canals, locks, indicator .....	IX.
Brown, William F.....	Water wheel.....	XI.
Bridewell, E.....	Saddles, side.....	XVI.
Brown, William.....	Trunks, valises .....	XVI.
Burt & Carriel.....	Rags, dusting.....	III.
Burgess, William.....	Fire-place.....	V.
Buck, Reuben.....	Fire-place.....	V.
Burt, William A.....	True meridian, finding.....	VIII.
Bucklin & Jacobs.....	Tunneling rivers .....	IX.
Burkhyte, Tunis, J.....	Shingle machine .....	XIV.
Buzell, John D.....	Granite, cutting and dressiug .....	XV.
Buckland, Charles.....	Corsets, rings, &c.....	XXI.
Carpenter, Warren.....	Corn, hulling .....	I.
Carpenter, Warren.....	Corn, sheller .....	I.
Cannon, William P.....	Plough .....	I.
Campbell, William.....	Awl haft .....	II.
Calvert, William W.....	Wool or flax, comber.....	III.
Carmichael, William M.....	Stoves .....	V.
Campbell, H. R.....	Steam engine, locomotive .....	VI.
Carpenter, F.....	Steam engine, rotary .....	VI.
Carr, Job.....	Steam, generating.....	VI.
Capron, O. H., and G. Barton, jr.....	Sulky seat.....	X.
Card, Charles V.....	Pump, frictionless .....	XI.
Carey, William .....	Saw, belt .....	XIV.
Gallihan, Otho W. S.....	Saddles.....	XVI.
Camp, Hezekiah.....	Printing press.....	XVIII.
Chandler & Ranger .....	Plough.....	I.
Chaffee, E. M.....	Caoutchouc, application, &c.....	IV.
Chapin, Nathan.....	Pump, forcing .....	XI.



PATENTEES.	INVENTIONS OR DISCOVERIES	CLASS.
Chamberlain & Cleffin.....	Press, hay.....	XII.
Chevrier, Lewis.....	Power, endless chain, &c.....	XIII.
Channel, J. C.....	Mortising machine.....	XIV.
Chapman, George W.....	Cannon, malleable iron.....	XIX.
Cleaveland, Porter.....	Thrashing machine.....	I.
Clark, Henry.....	Gin, cotton.....	III.
Close & Sanford.....	Extracts, making.....	IV.
Clark, Edward.....	Lead, white.....	IV.
Clowes, Isaac.....	Fire, extinguishing.....	V.
Clark, Aaron.....	Steam engine, rotary.....	VI.
Clark, David.....	Mortising machine.....	XIV.
Clark & Boynton.....	Stone, cutting and planing.....	XV.
Clark, Samuel.....	Bedstead, cot.....	XVII.
Clark, Isaac.....	Piano forte.....	XVIII.
Concklin, John C.....	Harrow, press.....	I.
Cole, Lewis.....	Hulling rice.....	I.
Cooper, James.....	Thrashing machine.....	I.
Cockran, J.....	Andirons, bars.....	II.
Coover, William.....	Latch, mortise.....	II.
Conant, Abel.....	Lock, door.....	II.
Couillard, S., jr.....	Flax and hemp, &c., combing.....	III.
Comins, John P.....	Loom, power, and taking up motion.....	III.
Couillard's, S., assignees.....	Wool, combing.....	III.
Cooper, Peter.....	Salt, supplying.....	IV.
Cochran, R. G.....	Cooking stove.....	V.
Cochran, John.....	Propelling paddles for boats.....	VII.
Cook, Tobias.....	Raising vessels.....	VII.
Coleman, Spencer.....	Axletrees for carriages, &c.....	X.
Coster & Pennypacker.....	Horse power.....	XIII.
Coppuck, James.....	Brick, moulding.....	XV.
Coston, Benton P.....	Feathers, dressing.....	XVII.
Cochran, John W.....	Cannon, vent.....	XIX.
Colt, Samuel.....	Fire-arms.....	XIX.
Cram, H.....	Screws, cutting wood, &c.....	II.
Cralle, Richard K.....	Salt, manufacturing.....	IV.
Cram, Smith.....	Breakers, cylindrical.....	X.
Cram, Smith.....	Car, taking over elevations.....	X.
Crim, Peter.....	Saddles, spring.....	XVI.
Currier, E. G.....	Cooking stove.....	V.
Currier, E. G.....	Cooking stove.....	V.
Curtis, James F.....	Spark catcher.....	VI.
Curtis, Lorrain.....	Planing machine.....	XIV.
Dalkener, John.....	Plough.....	I.
Davis, William.....	Ores, screening and washing.....	II.
Day, Moses.....	Spinning hemp, &c.....	III.
Daboll, Ezekiel.....	Stoves, foot.....	V.
Dawley, A. S.....	Steam engine.....	VI.
Davis & Ashdown.....	Car, rail-road.....	X.
Davis, Sampson.....	Pumps, vibrating.....	XI.
Davis, Luther.....	Washing machine.....	XVII.
Davidson, Amory.....	Washing machine.....	XVII.
Darling, B. and B. M.....	Pistols.....	XIX.
Dennison, Rufus.....	Smut machine.....	I.
Dexter, George B.....	Hats, water-proof, silk.....	III.
Debit, William.....	Rags, cleaning.....	III.
Deitz, A.....	Harness pad, elastic water-proof.....	XVI.
Douglass, Beriah.....	Cooking stove.....	V.
Douglass, Beriah.....	Stoves, parlor.....	V.
Dunlap, Jefferson.....	Candles, moulds.....	IV.
Dunham, Isaac.....	Lamps, light-house burner.....	V.
Duff & Murphy.....	Valve, puppet, raising.....	VI.
Dukehart, William.....	Harness, riveting.....	XVI.
Duchman, William.....	Saddles, spring.....	XVI.
Durell, H.....	Combs, metallic.....	XXI.
Drummond, John.....	Cutting grass.....	I.
Eastman, J. S.....	Cultivator.....	I.
Echols, James H.....	Cordage, rope yarns, &c.....	III.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Edgar, H. and J. W. ....	Thrashing machine.....	I.
Eddy, W. T. ....	Spinning, spindle and flier.....	III.
Edgar, Isaac W. ....	Steam engine, locomotive and rail-roads....	VI.
Egbert, Benjamin ....	Pump, forcing.....	XI.
Elgar, William L. ....	Water wheel.....	XI.
Emery, Laban.....	Tanning.....	XVI.
Engle, Robert.....	Smut machine.....	I.
Etheridge, Samuel.....	Mill stones, picks.....	XIII.
Everett, Joseph.....	Straw cutter.....	I.
Farlee, John.....	Plough.....	I.
Fanning, William.....	Cordage and rope.....	III.
Ferguson, J. C.....	Plough, wheel.....	I.
Fickhardt, F. A.....	Furnaces, for warming buildings.....	V.
Fickhardt, F. A.....	Stoves.....	V.
Fitzpatrick, Edward.....	Boats, to be used under water.....	VII.
Fitzgerald, Daniel.....	Horse power.....	XIII.
Fitzgerald, Daniel.....	Horse power.....	XIII.
Fitzgerald, Richard.....	Shears, tailors'.....	XXI.
Flanders & Rathburn.....	Winnowing wheat.....	I.
Flint & Mills.....	Gypsum, applied to cisterns.....	IV.
Fletcher, John C.....	Lamps, reflecting.....	V.
Flint & Mills.....	Gypsum, applied to cisterns.....	XV.
Forbes, Charles.....	Paper making.....	III.
Fowler, William.....	Spinning, roping, cotton.....	III.
Force, Clark.....	Wheels, confining carriage to.....	X.
Fowler, De Grasse.....	Gimlet, forging.....	XIV.
Fowler, Wm. M.....	Gimlets, &c.....	XIV.
French, Maynard.....	Stoves, rotary caps, &c.....	V.
Freytag, Michael.....	Ice breaker.....	VII.
Frazier, Blanchard and Gill.....	Stoves.....	V.
Frink, Harvey.....	Gate flume.....	XI.
Freeman, S. H.....	Regulating speed wheel for grist mills.....	XIII.
Garnett, James M.....	Cultivator.....	I.
Garrett, Samuel.....	Water wheel.....	XI.
Gay, Ira.....	Planing machine.....	XIV.
Garrand, Britain.....	Bedbug, destroying.....	XVII.
Gerrish, Daniel.....	Constructing vessels.....	VII.
Gerrish, Wm.....	Grist mill, for cutting.....	XIII.
Gentry, Joseph C.....	Mill, metallic.....	XIII.
Gerrish, Daniel.....	Saw, mills.....	XIV.
Gerrish, Wm.....	Boots, crimping legs.....	XVI.
Geer, John S.....	Washing machine.....	XVII.
Gibbs, Joshua.....	Plough.....	I.
Gilman, Elias.....	Ointment for cancer.....	IV.
Giraud, John J.....	Grates, cooking.....	V.
Gilbert, Charles G.....	Horse power.....	XIII.
Giraud, J. J.....	Power, self-motive.....	XIII.
Goodyear, John.....	Thrashing and cleaning cloverseed.....	I.
Goldsborough, Nicholas.....	Thrashing machine.....	I.
Groening, Frederick.....	Hats, palm leaf.....	III.
Gould, Aaron.....	Dying hats.....	IV.
Goudy, Samuel.....	Saw mills.....	XIV.
Gordon, Edwin.....	Cannon for chain shot.....	XIX.
Goodrum, Thomas.....	Stock for neck.....	XXI.
Gray, Albert W.....	Corn sheller.....	I.
Greenleaf, Wm. C.....	Cutting grass.....	I.
Granger, John L.....	Milk, preserving.....	I.
Greenleaf, Wm. C.....	Seeding grain, sowing.....	I.
Greenleaf, Daniel.....	Hats, elastic, ventilating.....	III.
Granger, Chester.....	Cooking stove.....	V.
Gray, James A.....	Coffins, metallic.....	XXII.
Guyon, H. G.....	Press, lever.....	XII.
Hanson, Amos.....	Churn.....	I.
Haynes, Richard.....	Bolt and spike, drawing.....	II.
Harrington, Daniel.....	Fire-proof, safe.....	II.
Hall & Chase.....	Window shutter, fastening.....	II.
Harrison, Alexander.....	Furnaces and boiler combined.....	V.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Harryman, John.....	Stoves, Franklin .....	V.
Hant, Samuel .....	Water conveying .....	XI.
Harman, John, jr. ....	Mill .....	XIII.
Hawkins, John .....	Mortising machine .....	XIV.
Hawk & Keyes.....	Shingles, dressing.....	XIV.
Hamilton, James.....	Veneers, cutting.....	XIV.
Halloway, Gooding .....	Brick machine.....	XV.
Hale, Ebenezer .....	Saddles and collars.....	XVI.
Hall, J. ....	Shoe making machine.....	XVI.
Hatcher, J. W. ....	Cutting apples, &c.....	XVII.
Hall, Daniel K.....	Feathers, cleaning.....	XVII.
Hartye, H. ....	Piano forte.....	XVIII.
Harrison, T. H. ....	Lancet, revolving.....	XX.
Hanson, Moses R.....	Tooth extractor.....	XX.
Hedges, Isaac A. ....	Corn sheller .....	I.
Hendrick, H.....	Loom, power, and taking up motion .....	III.
Heintzelman, J. J. ....	Stoves, air warmer.....	V.
Hendricks & Elwell.....	Stoves and fire-place.....	V.
Hess, David.....	Raising water by weight.....	XI.
Hedge, Lemuel .....	Plane, revolving.....	XIV.
Heath, Simeon.....	Tanning .....	XVI.
Henkel, Ambrose .....	Cutting sausage meat.....	XVII.
Hibbard, H.....	Paint, composition.....	IV.
Higgins, Charles.....	Cooking stove .....	V.
Hinds, Ball & Pike.....	Water, applying.....	XI.
Hitchcock, Wm.....	Water wheel .....	XI.
Hill, Jonathan .....	Boot and shoe soles, cutting.....	XVI.
Hopper & Doughty .....	Hulling cloverseed.....	I.
Howe, H. P.....	Paper, cylinders for drying.....	III.
Howe, Henry .....	Paper drying.....	III.
Holland, Homer .....	Lead, white.....	IV.
Howard, John C. ....	Grates, sliding.....	V.
Hatchkiss, Gideon .....	Propelling boats, &c.....	VII.
Houston, J. A. Hinman, and J. Ingraham.....	Dock, dry.....	IX.
Horne, David .....	Hydrants.....	XI.
Horton, John.....	Balance, platform.....	XII.
Hobbs, Jonathan, jr.....	Shingles, &c., sawing .....	XIV.
Hopkinson, John.....	Harness, horse collars.....	XVI.
Hubbard, J. M.....	Beehive .....	I.
Hull, Alonzo G.....	Wrench, screw .....	II.
Hungerford, Newell.....	Springs, carriage.....	X.
Hunt, Walter.....	Saw for felling trees.....	XIV.
Hubbard, Joab H.....	Washing machine .....	XVII.
Hyde, James.....	Straw cutter.....	I.
Ingham, John.....	Steam engine, rotary, reacting.....	VI.
Ives, Joseph.....	Clocks .....	VIII.
Ives, James S.....	Spring for clocks.....	VIII.
Ives, Richard A.....	Combs, metallic.....	XXI.
Jackson, Samuel .....	Churn dash.....	I.
Jemeson, W. W. ....	Hats, blocking.....	III.
Jennings, Isaiah .....	Turpentine, spirits, extracting.....	IV.
Jennings, Isaiah.....	Lamps.....	V.
Jennings, Isaiah.....	Steam, generating.....	VI.
Jenkins, Elias .....	Cider mill.....	XIII.
Jenkins, M.....	Saddles, ladies' .....	XVI.
Jones, William R.....	Drills for metal .....	II.
Jones, J. T.....	Plane.....	XIV.
Johnson, Herkimer.....	Shaving leather .....	XVI.
Johnson, George.....	Kitchen ranges .....	V.
Jones, Adrian .....	Stoves, anthracite coal.....	V.
Keane, William.....	Screw, manufacturing .....	II.
Kelsey, Mellville.....	Wire cap.....	II.
Keith, Edwin.....	Gin, cotton, grates.....	III.
Kettell & Wright .....	Hats, bodies, stiffening.....	III.
Kerr & Hoover .....	Distilling.....	IV.
Kendall, Jonas, assignee of J. Perkins .....	Cooking stove.....	V.
Kepner, Samuel.....	Rudders .....	VII.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Kenzie, Charles.....	Water wheel.....	XI.
Keller, Charles M.....	Staves, sawing.....	XIV.
Keplinger, Samuel.....	Feathers, dressing.....	XVII.
Kile, Conrad.....	Loom, weaving stocks.....	III.
Kidder, Levi.....	Cement, hydraulic.....	IV.
Kidder, Levi.....	Wells, covers of.....	XI.
King, Sumner.....	Casks, machine.....	XIV.
Kingsley, J. Lemuel.....	Printing press.....	XVIII.
Knapp, Lewis.....	Buildings, constructing.....	IX.
Knight, Isaac.....	Buildings, stores, &c.....	IX.
Knowles, Hazard.....	Power, alternate motion, by contraction and expansion of metals.....	XIII.
Knisely, Christian.....	Bedsteads.....	XVII.
Knowlton, F. P.....	Feathers, dressing.....	XVII.
Korn, Henry.....	Harness, nets, fly, for horses.....	XVI.
Kraft, Benjamin.....	Saddles.....	XVI.
Kugler, Benjamin.....	Furnace, blast.....	II.
Lamson, S.....	Cutting scythe.....	I.
Lapham, Benjamin.....	Loom, power.....	III.
Ladd, Samuel.....	Spinning, fliers.....	III.
Ladd, Samuel.....	Spinning, fliers.....	III.
Lacier, Sebastian H.....	Cooking stove.....	V.
Ladd, C. P.....	Balance, platform.....	XII.
Laughlin & Hill.....	Rolling leather.....	XVI.
Larcum, Amos.....	Washing machine.....	XVII.
Leonard, William B.....	Loom, power.....	III.
Lewis, R. B.....	Oakum and hair picking.....	III.
Lear, Asahel.....	Cooking stove.....	V.
Lewis, Lovell.....	Heat, evolution and management of.....	V.
Lesner, W. W.....	Pump, forcing.....	XI.
Liversidge, W. and T.....	Starch, rice.....	IV.
Liddle, John.....	Cooking stove.....	V.
Little, James H.....	Washing machine.....	XVII.
Locklin, Nathan.....	Plough.....	I.
Loomis, Wm.....	Thrashing cloverseed.....	I.
Lockling, Nathan.....	Smoke, consuming.....	V.
Lombard, Nathaniel K.....	Maps, charts, &c., apparatus for.....	VIII.
Long, Stephen H.....	Bridges, frame.....	IX.
Lochier, Henry.....	Tanning.....	XVI.
Lounds, Jacob J.....	Pencil, ever-pointed, open case.....	XVIII.
Lyon, 2d. L.....	Hats, napping.....	III.
Lyman, Charles.....	Cooking stove.....	V.
Marshall, Mallory M.....	Straw cutting, box.....	I.
Mans, Lewis H.....	Thrashing machine.....	I.
Manning, James.....	Winnowing clover seed.....	I.
Mathews, James.....	Fire-proof chest.....	II.
Mans, L. H.....	Patterns for casting.....	II.
Marsh, Stephen.....	Napping cloth.....	III.
Mackie, Patrick.....	Caoutchouc, dissolving.....	IV.
Mayo & Mills.....	Ventilating houses.....	V.
Man, Arlon.....	Condensing cotton.....	XII.
Marsh, Elias.....	Crane.....	XII.
Mathews, James.....	Chocolate, moulding.....	XIII.
Marvin, Dudley.....	Horse power.....	XIII.
Martz, P. M.....	Planing machine.....	XIV.
Matthews, M.....	Boots, trees.....	XVI.
Maguire, Jonas.....	Bedsteads.....	XVII.
Masser & Smith.....	Cutting meat.....	XVII.
Marsh, Johnson.....	Lock, gun and pistol.....	XIX.
McClory, James.....	Lock, door.....	II.
McClory, James.....	Lock, door.....	II.
McCreight, W. & J.....	Gin, cotton.....	III.
McCreight, James.....	Gin, cotton.....	III.
McWilliams, Alexander.....	Stoves for heating carriages.....	V.
McDonough, A.....	Spark catcher.....	VI.
McCausland, A. jr.....	Valve, slide.....	VI.
McCain, A. M.....	Rail-road, plates, jointing.....	IX.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
McLean, A. M.	Press, tobacco.	XII.
McCreight, W. and J.	Grist mill.	XIII.
McGhee, W. J.	Saw mills.	XIV.
McGregory, Cyrus	Staves, sawing for barrels.	XIV.
McCormick, William	Saddles, elastic.	XVI.
McBride, Andrew R.	Saddles, trees	XVI.
McLaughlin, Ira.	Bedstead fastenings.	XVII.
Merriman, Charles.	Churn.	I.
Merriman, Samuel G.	Saw teeth, cutting.	II.
Merriman, Marcus, jr.	Window fastening	II.
Mellish, Henry.	Wagon, hanging.	X.
Mercer, Carey S.	Water wheel.	XI.
Mendall & Ricketts	Moulding pottery.	XV.
Mellish, Henry.	Cutting vegetables.	XVII.
Merriman, Charles.	Washing machine.	XVII.
Miller, Timothy	Plough.	I.
Mix, William	Spoons, casting.	II.
Milo, Francis	Spark catcher.	VI.
Mixwell, Abner T.	Pumps.	XI.
Mitchell, J.	Press, cotton.	XII.
Moore & Hascall	Cutting grain, &c.	I.
Mott, Jordan L.	Columns, cast iron, &c.	II.
Montgomery, Adam.	Cordage, rope, serving.	III.
Morse, John	Spinning fliers.	III.
Morgan, John.	Spinning machine.	III.
Mott, Jordan L.	Stoves and fire place.	V.
Morse, Andrew.	Capstan.	VII.
Moffatt, John	Brick machine.	XV.
Morse, William	Granite, hammering, &c.	XV.
Moody & Eastman	Beds, spring, spiral.	XVII.
Morrison, Samuel	Lock, gun.	XIX.
Mudge, Abraham.	Smut machine.	I.
Musten, Joseph.	Horse power.	XIII.
Murry, James.	Saw mill, endless side chain, &c.	XIV.
Naylor, T. B.	Saw mills.	XIV.
Neal, Henry G.	Corn sheller.	I.
Newton, Levi	Pump, forcing.	XI.
Newton, Samuel.	Horse power.	XIII.
Newton, William.	Washing machine.	XVII.
Newman, F. H.	Truss.	XX.
Newson, John W.	Truss.	XX.
Neill, Thomas	Traps for rats.	XXII.
Nicholson, Thomas.	Churn.	I.
Nivens, W. R.	Crackers, cutting and rolling.	XVII.
Nott, Eliphalet.	Steam, generating.	VI.
Noble, Philander	Propelling boats.	VII.
Noble, James W.	Trunks, valises, &c.	XVI.
Olmstead, L. B.	Baker, reflecting.	V.
Orr, Isaac.	Stove, air tight.	V.
Parsons, Aaron.	Thrashing machine.	I.
Page, George.	Bit, spiral, &c.	II.
Parke, Charles	Cordage, rope, serving.	III.
Paree, J. & N.	Pearl ash.	IV.
Parmalee, Howell.	Stoves.	V.
Park, Moody	Boilers, steam, purifying water.	VI.
Pardie, William	Time piece.	VIII.
Parker, Obadiah.	Sewer of hydraulic cement.	IX.
Page, George.	Mortising machine.	XIV.
Page, George.	Mortising and boring machine.	XIV.
Page, George.	Mortising timber.	XIV.
Perry, P. F.	Cooking stove.	V.
Peckham, Charles W.	Faucets, molasses.	XI.
Peck, James M.	Balance, platform.	XII.
Peckham, C. W.	Coffee mill.	XIII.
Pell, John B.	Boring wood.	XIV.
Peeler, David.	Lathe, gripe chuck for.	XIV.
Perry, Joseph.	Sawing machine.	XIV.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Peavy, Joseph.....	Screws, cutting wooden.....	XIV.
Pethick, John.....	Piano-forte.....	XVIII.
Philbrick, John.....	Cotton, drying, &c.....	I.
Phillips, Alonzo D.....	Matches, friction.....	IV.
Pitts, Harvey W.....	Plough.....	I.
Pierson, J. H.....	Screws, cutting, &c.....	II.
Pierson, J. H.....	Screws, cutting, &c.....	II.
Pitts, J. A.....	Ovens, heating rooms.....	V.
Pickering & Lightner.....	Car, rail-road, &c.....	X.
Pinno, Joseph, Jr.....	Sawing wood.....	XIV.
Pierce, Hubbard L.....	Boots, crimping, cramp for.....	XVI.
Plank, Jacob.....	Plough.....	I.
Platt, Alonzo.....	Lamps, hanging.....	V.
Poague, J. B. and W. F.....	Hulling clover seed.....	I.
Pollard, Samuel.....	Ovens.....	V.
Porter, Rufus.....	Distance, measuring.....	VIII.
Pope, Josiah.....	Cooler, flour.....	XIII.
Porter, Rufus.....	Horse power.....	XIII.
Pomeroy, E. G.....	Boots, crimping, clamps for.....	XVI.
Post & Collier.....	Feathers, renovator.....	XVII.
Pomeroy, E. M.....	Razor case and sharpener.....	XXI.
Prouty & Mears.....	Plough.....	I.
Pratt, Jonas.....	Smut machine.....	I.
Prutzman, Augustus.....	Locks, &c.....	II.
Pratt, Elisha N.....	Cooking stove.....	V.
Prescott, William R.....	Fireplace.....	V.
Pray, John G.....	Wharves, &c., constructing.....	IX.
Prince, L. R.....	Washing machine.....	XVII.
Pursell, John.....	Hemp, breaking.....	III.
Putnam, J. and C.....	Wheels, boxes, &c.....	X.
Quimby P. B.....	Locks.....	II.
Rathburn & Tinker.....	Saw, straightening.....	XIV.
Rathburn, Erastus.....	Saw mill, blocks for.....	XIV.
Ralph, Joseph.....	Syringe, injecting.....	XX.
Reading, Pierson.....	Hulling cotton seed.....	I.
Reoff, Almon.....	Lock, door.....	II.
Reading, Pierson.....	Gin, cotton.....	III.
Reed, Nathan.....	Rail-road.....	IX.
Read, Isaac.....	Saw mills.....	XIV.
Reynolds, George.....	Feathers, dressing.....	XVII.
Richardson, Samuel.....	Smut machine, and hulling.....	I.
Richardson, J. S.....	Door plates.....	II.
Richardson, Charles.....	Forge, blacksmith.....	II.
Richards, Joseph.....	Lead, white.....	IV.
Ripley, Ezra.....	Stove pipes.....	V.
Ring, Zebedee.....	Dock, hydraulic.....	IX.
Richards, Edward.....	Drawing knife.....	XIV.
Riker, Rufus.....	Saw mill, cross cutting.....	XIV.
Rich, Martin.....	Saw mill dogs.....	XIV.
Roberts, Hezekiah.....	Churn.....	I.
Robbins, Hildreth.....	Hulling clover seed.....	I.
Root, Erastus S.....	Rake, horse.....	I.
Rollins, Jacob S.....	Thrashing machine.....	I.
Root, Elisha K.....	Axes.....	II.
Rouse, James.....	Hinges, butt.....	II.
Robinson, Draper & Lord.....	Knobs, glass, &c.....	II.
Robinson, Draper & Lord.....	Knobs, glass, &c.....	II.
Rood, Reuben.....	Sores, curing.....	IV.
Robertson, Robert.....	Stoves, conical.....	V.
Rogers, James H.....	Tire for wheels.....	X.
Rodgers, Jno. F.....	Pump, forcing.....	XI.
Robbins, Austin H.....	Cutting vegetables.....	XVII.
Ruggles, Henry.....	Pitch, making.....	IV.
Russell, Nathaniel.....	Stoves.....	V.
Ruggles, John.....	Steam engine, locomotive, for inclined planes.....	VI.
Russell, Sylvanus.....	Excavating from rivers.....	IX.
Ryan, W. B.....	Smut machine.....	I.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Sanborn, Benning.....	Boats and rafts, passing, &c.....	VII.
Sanders, James.....	Saw mills.....	XIV.
Sadler, Thomas N.....	Boots, machine for turning, &c.....	XVI.
Salisbury & Uram.....	Mattresses, bolsters, &c.....	XVII.
Schnaitman, Isaac.....	Glasses for spectacles.....	VIII.
Scholfield, Nathan.....	Water wheel, &c., regulating, &c.....	XI.
Shull, N. J.....	Cultivator or hoe harrow.....	I.
Shugert, John.....	Tew iron.....	II.
Shly, John.....	Picking and breaking wool.....	III.
Sherman, Thomas H.....	Pitch, composition.....	IV.
Shaw, Thomas.....	Cooking stove.....	V.
Shultz, William.....	Spark catcher.....	VI.
Share, Philip T.....	Wheels, horse, detaching.....	X.
Sherwood, Gilbert.....	Crane.....	XM.
Sheaffer, Christian.....	Cider mill.....	XIII.
Shaw, Erastus M.....	Mortising machine.....	XIV.
Shackford, D. and T.....	Dough machine.....	XVII.
Sizer, A. and George.....	Gridiron and spider.....	V.
Skinner & Kead.....	Straw cutter.....	I.
Skinner, Elijah.....	Fire place.....	V.
Skinner, Richard.....	Horse power.....	XIII.
Smith, Ira.....	Corn shelling.....	I.
Smith, David M.....	Awl haft.....	II.
Smith, Benjamin.....	Lock, door.....	II.
Smith, Elihu.....	Chimneys ovens, &c.....	V.
Smith, Nicholas.....	Cooking stove, and parlor.....	V.
Smith, Jno. K.....	Car, door fastening.....	X.
Smith, Elihu.....	Laths, machine.....	XIV.
Snider, Isaac.....	Plough.....	I.
Snyder, Benjamin F.....	Saw mill crank.....	XIV.
Soule, John.....	Veneers, laying on ogee, &c.....	XIV.
Souder, Henry.....	Washing machine.....	XVII.
Spafford, M. B.....	Smut machine.....	I.
Spear, E. P.....	Hats, bodies, stiffening.....	III.
Spalding, S. B.....	Cooking stove.....	V.
Stoker, Elijah.....	Saw, filing teeth of.....	II.
Stowell, Isaiah.....	Fermenting and distilling spirits.....	IV.
Stevens, Foster.....	Fireplace or stoves.....	V.
Strong, Eben B.....	Ovens, baker.....	V.
Strange, J. W. and E.....	Boilers, steam.....	VI.
Stoddard, James S.....	Anchor, cast iron.....	VII.
Straub, Abraham.....	Water wheel.....	XI.
Straub, Isaac.....	Horse power.....	XIII.
Stevens, Peletiah.....	Boots, turning.....	XVI.
Sutton, J. and J.....	Stone cutting.....	XV.
Swartz, Peter, Jr.....	Distilling.....	IV.
Swanzy, Jno. H. B.....	Stoves.....	V.
Swift, Beriah.....	Dye woods, cutting and shaying.....	XIV.
Sweetzer, Washington.....	Trunks, travelling.....	XVI.
Sykes & Conradt.....	Spinning wool.....	III.
Tarbox & Kneeland.....	Straw cutter.....	I.
Talbot, Jno.....	Rail-road turn out.....	IX.
Taylor, Autin.....	Mill stones, cooling.....	XIII.
Taylor, Jeremy.....	Bit stocks.....	XIV.
Terrell, S. R.....	Blood, equalising the.....	IV.
Terry, Stephen.....	Packing screw, inverted.....	XII.
Thomas, Jno. E.....	Churn.....	I.
Thompson, Samuel.....	Medicine, botanic.....	IV.
Throp, Gould.....	Cooking stoves.....	V.
Thompson, R. H.....	Pegs, shoe.....	XIV.
Thomas, Robert S.....	Saw, rotary.....	XIV.
Thomas, Enach.....	Splints for fractures.....	XX.
Thompson, Isaac.....	Truss for hernia.....	XX.
Tilford, T. M.....	Plough.....	I.
Tiers, Arundus.....	Furnace, smelting.....	II.
Tous, B. and A.....	Cooking stove.....	V.
Tippet, Edward D.....	Steam engine, safety.....	VI.



PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
Tichenor, J. S. Goodridge, and J. A. Hart.	Fence, Pickets, cutting.....	XIV.
Town, J. T.....	Smut machine.....	I.
Towne, J. T.....	Water wheel.....	XI.
Todd, Billy and Alanson.....	Feathers, dressing.....	XVII.
Town, Abner.....	Stock, gun, lathe for.....	XIX.
Traver, P. C.....	Cooking stove.....	V.
Treadwell, F. C.....	Ovens, heating by anthracite.....	V.
Trask, Samuel.....	Ice cutting machine.....	VII.
Treadwell, Ephraim.....	Crackers and biscuit, cutting.....	XVIII.
Turney, Andrew.....	Drilling stone.....	IX.
Turner, Joseph.....	Raising water.....	XI.
Turk, John.....	Mill wheel, dresser.....	XIII.
Tuells, Melzer.....	Planing machine.....	XIV.
Tyler, Samuel.....	Churn.....	I.
Ulam, David.....	Steam engine, rotary.....	VI.
Underwood, Stephen.....	Boats, passing over dams.....	VII.
Variel, Davis.....	Churn.....	I.
Van Tiers, S.....	Anvil block.....	II.
Vale, Charles.....	Cooking stove.....	V.
Van Allen, C. D.....	Ovens, reflecting.....	V.
Vaughn, Jirah.....	Balance.....	XII.
Walker, Wm. B.....	Yarn, woollen.....	III.
Waite, G. W.....	Heating chocolate ingredients.....	V.
Wade John.....	Sails for ships, &c.....	VIII.
Walker, S. T.....	Hydrants.....	XI.
Walker, S. T.....	Hydrants.....	XI.
Walker, J. F.....	Pumps.....	XI.
Waldo, Orson.....	Water wheel.....	XI.
Walker, Jeremiah.....	Lever power, sawing, &c., by.....	XII.
Waite, Geo. W.....	Chocolate, grinding.....	XIII.
Washington, David.....	Saw mills.....	XIV.
Waterman, Calvin.....	Brick machine.....	XV.
Warner & Robinson.....	Harness, horse, collars, &c.....	XVI.
Watson, E. Y.....	Washing machine.....	XVII.
Walston, Samuel.....	Thigh, fractured, apparatus for.....	XX.
Warner, Ransom.....	Suspenders, manufacturing, gum, &c.....	XXI.
Weeks, James M.....	Bee hive.....	I.
Webb, Jas. W.....	Rake, horse.....	I.
Webb, A. V. H.....	Distilling, cold.....	IV.
Wenn, Peter.....	Heat applying, from lime, &c.....	V.
West, Henry.....	Wagon, coaches, and breaks for.....	X.
Webb, Joshua.....	Sawing timber.....	XIV.
Wells, L. L.....	Sacking bottom.....	XVII.
Whittier, Simon.....	Churn.....	I.
Wharff, Amasa.....	Churn.....	I.
Whittaker, Welcome.....	Hinges, butt, &c.....	II.
Whiteman, J.....	Cordage, rope, making.....	III.
Whipple, Cullen.....	Loom, weaving.....	III.
White, John.....	Cement, hydraulic.....	IV.
Whiting, John.....	Cooking stove.....	V.
Whitney & Barr.....	Spark catcher.....	VI.
Whitman, Shepherd.....	Steam engine, rotary.....	VI.
White, Prentiss.....	Thimbles, ships.....	VIII.
Whiteley, Francis.....	Compass, quadrant, &c.....	VIII.
White, John G.....	Pump, forcing, double.....	XI.
Whitfield, Edward.....	Pump, frictionless.....	XI.
Whitman, Wm.....	Horse power.....	XIII.
Whitley, Thomas W.....	Glass cases.....	XV.
Witherow, Samuel.....	Plough.....	I.
Wilson, David.....	Winnowing machine.....	I.
Wilkinson, Arnold.....	Polishing iron and brass wire for, &c.....	II.
Wilkinson, Jephtha A.....	Loom reeds, machine for making.....	III.
Withered, J.....	Spinning wool.....	III.
Williams, Elijah.....	Pot ash and pearl ash.....	IV.
Williams, Daniel.....	Cooking stove.....	V.
Winslow, Nathan.....	Grates, pendulum.....	V.
Williamson, James.....	Grates, portable.....	V.



PATENTEDS.	INVENTIONS OR DISCOVERIES.	CLASS.
Winter, Gabriel.....	Spark catcher.....	VI.
Wilkinson, David.....	Canals, locks.....	IX.
Williams, John S.....	Roads, constructing.....	IX.
Wingate, Frederick.....	Water wheel.....	XI.
Wilder, Aretas A.....	Water wheel, propelling.....	XI.
Wilbur, Job.....	Wind wheel.....	XI.
Willard, Simon.....	Saw mills.....	XIV.
Williams, Daniel.....	Tanning, bark for.....	XVI.
Wilbur, Elam.....	Feathers, dressing.....	XVII.
Withers, Henry.....	Pencil case and pen.....	XVIII.
Willard, James H.....	Bones, setting, apparatus for.....	XX.
Woodcock, B.....	Plough.....	I.
Wolfolk, Jas. M.....	Straw cutter.....	I.
Woodward, Clement.....	Stoves, ventilating.....	V.
Woolley Williams.....	Window frieze and covering.....	IX.
Woodbridge, William.....	Wheels, cart and carriage.....	X.
Wood, Jesse C.....	Raising water.....	XI.
Woodworth, William.....	Planing machine.....	XIV.
Wood, Andrew.....	Chairs, easy.....	XVII.
Wright, Isaac S.....	Straw cutter.....	I.
Wright, John.....	Distilling, still for.....	IV.
Wyman, Oliver.....	Grist mill.....	XIII.
Zwiesler, James, Jr.....	Tailoring art of.....	XXI.



[ I. ]

## CLASSIFIED LIST OF PATENTS,

GRANTED DURING THE YEAR 1850, WITH THE NAMES OF PATENTEES,  
PLACES OF RESIDENCE AND DATES OF PATENTS.CLASS I.—AGRICULTURE, *including Instruments and Operations.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bee hives, entrance to.....	John E. Dalton and Thomas Stevens.....	New Vienna, O.....	April 9, 1850
Bee hive, working the doors of a.....	Jarvis Case.....	Selma, O.....	Nov. 13, "
Bee moth traps.....	George Fletcher, sr.....	Greensburg, Ind.....	Mar. 26, "
Churns.....	Zenas C. Robbins.....	St. Louis, Mo.....	Jan. 8, "
Churns.....	Robert W. Davis.....	Rodgersville, N. Y.....	April 2, "
Churns.....	John Andrews.....	Woburn, Mass.....	April 23, "
Churns, atmospheric.....	John Young.....	West Galway, N. Y.....	Jan. 22, "
Churns, atmospheric.....	Simon F. Emerson.....	Canaan, O.....	April 2, "
Churns, atmospheric.....	Peter F. Ellicott.....	Philadelphia, Pa.....	June 25, "
Churns, atmospheric.....	John O'Neil.....	Xenia, O.....	July 30, "
Churn dashers.....	Isaac D. Garlic.....	Lyons, N. Y.....	Feb. 26, "
Churn dashers.....	Nathaniel Routzahn.....	Middletown, Md.....	Mar. 19, "
Churn dashers.....	Joseph Marsh.....	Petersburg, Ill.....	July 30, "
Churn dashers.....	Robert S. Sherman.....	Napanock, N. Y.....	Aug 6, "
Churn dashers.....	William and Matthew C. Walker.....	Lancaster, Pa.....	Aug. 6, "
Churn dashers, spiral.....	Cornelius R. and John Hight.....	Geneva, Ill.....	July 9, "
Churn dasher, working a rotary and vertical.....	William R. Nash.....	Bridgeport, Conn.....	May 7, "
Churns, rotary.....	Osbert B. Loomis.....	Windsor, Conn.....	Apr. 2, "
Clevises, plough.....	John B. Stoner.....	Southampton, Pa.....	Sept. 10, "
Clevis, plough.....	Gerrett Erkson.....	Hobart, N. Y.....	Sept. 17, "
Clevis, substitute for the.....	John and Wm. D. Howell and Joseph Sipe.....	Clark co., O.....	Jan. 15, "
Cotton, picking from the bowls in the field.....	Saml. S. Rembert & Jedediah Prescott.....	Memphis, Tenn.....	Sept. 10, "
Cotton stalks, cutting in the field.....	Fields Bradshaw.....	Clinton, Ala.....	Feb. 12, "
Coulters to ploughs, fastenings of.....	Austin and Austin K. Whittlesey.....	Springport, N. Y.....	Sept. 22, "
Cream, processes of preparing.....	Charles D. Birdseye.....	New York, N. Y.....	Sept. 17, "
Cultivators.....	Ashley Crafts and Ebenezer Weeks.....	Auburn, O.....	Jan. 8, "
Cultivator teeth.....	Lewis Lamborn.....	Kennett Square, Pa.....	Mar. 26, "
Cultivator, weed cutters of a.....	Charles Rodger.....	Montpelier, Vt.....	June 25, "
Drills, grain*.....	William Bullock.....	Philadelphia, Pa.....	Jan. 8, "
Fanning mills.....	Jesse Roberts.....	Penn's square, Pa.....	May 28, "
Fanning mills.....	John Weidman.....	Littlestown, Pa.....	May 28, "
Fanning mills.....	Eleazer Bless.....	Minerva, Ky.....	Dec. 17, "
Forks, hay.....	Alinzor Clark.....	Southfield, N. Y.....	Oct. 8, "
Forks, hay and manure, fastening for.....	Alinzor Clark.....	Southfield, N. Y.....	Mar. 5, "
Forks, hay, shanks of.....	David Anthony, sr.....	Springport, N. Y.....	Oct. 8, "
Grain cleaning machine.....	Geo. W. Bowers.....	Leitersburg, Md.....	Sept. 24, "
Grain cradle.....	Isaac T. Grant and Daniel H. Viall.....	Schaghticoke, N. Y.....	Oct. 15, "
Grain cradle fingers.....	Joel Houghton.....	Ogden, N. Y.....	Dec. 17, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Grain, machine for raking and binding .....	John E. Heath .....	Warren, O. ....	July 22, 1850
Grain screens, rotary .....	Dan Pease, jr. ....	Floyd, N. Y. ....	Oct. 29, "
Harvester, cutters and rakes of a grain and grass .....	Hazard Knowles & Henry C. Bevington. ....	Washington, D. C. ....	July 2, "
Harvester, arrangement of cutters in a grain and grass .....	Jacob Pierson .....	Holmes, O. ....	July 2, "
Harvesters, grain .....	Edmund Quincy .....	Wilmington, Del. ....	Sept. 17, "
Harvesters, grain and maize .....	William Watson .....	Geneva, Ill. ....	Oct. 8, "
Harvester, maize .....	William B. Coates .....	Lacon, Ill. ....	Oct. 15, "
Harvesters, hemp .....	John J. Herndon .....	Chicago, Ill. ....	Oct. 15, "
Harvesters, rice .....	Stephen Bowerman .....	Big Lick, Va. ....	Oct. 1, "
Harvesters, cotton stalk .....	John E. Heath .....	Bonneetsville, S. C. ....	Oct. 1, "
Harvesting machines .....	Benj. M. Townsend .....	Detroit, Mich. ....	Jan. 15, "
Hay, machines for raking and loading .....	Robert Staddon .....	Warren, O. ....	April 9, "
Hullers, clover .....	Joseph Pollock, Allen R. McGriff, adm'r of the estate of .....	Quincy, Ill. ....	Milton, Pa. ....
Hulling clover seed .....	Joel K. Holland .....	Richmond, Ind. ....	Feb. 19, "
Manure, carts for spreading .....	Robert Hare .....	Washington, N. C. ....	July 9, "
Manure, preparation of animal and other .....	Homer Adkins .....	Philadelphia, Pa. ....	Jan. 29, "
Mowing machines .....	Geo. Hart .....	Round Prairie, Ill. ....	Jan. 15, "
Mowing machines, mounting the cutters of a .....	Chas. A. Wakefield .....	Dillsborough, Ind. ....	Oct. 8, "
Planting barrows, seed .....	William B. Willis .....	Essex co., N. Y. ....	Feb. 19, "
Planters, seed .....	Chas. A. Wakefield .....	Charlestown, Va. ....	Jan. 22, "
Planter, seed .....	Wm. Flory & Geo. Grove .....	Essex co., N. Y. ....	Feb. 19, "
Planter, cultivating, seed .....	John P. Groshon .....	Chambersburg, Pa. ....	Mar. 12, "
Planters, seed .....	Edward Wicks .....	Yonkers, N. Y. ....	Mar. 19, "
Planter, seed, the seed roller of a .....	George Fletcher, sr. and Turner Barnes .....	Bart Township, Pa. ....	Mar. 26, "
Planters, seed .....	Levi Haverstick .....	Greensburg, Ind. ....	Mar. 26, "
Planters, seed, construction of drill teeth in .....	Jacob Pierson .....	Manor Top, Pa. ....	April 2, "
Planters, seed, gearing for .....	Marcus & Silas S. Sage .....	Wilmington, Del. ....	April 9, "
Planters, seed, attachment of harrow to .....	Anthony Sandoe .....	Windsor, N. Y. ....	April 16, "
Planters, seed, gearing of .....	Lewis Moore .....	Mifflintown, Pa. ....	April 16, "
Planters, seed, seeding apparatus of .....	Sam'l & Morton Pennock .....	Bart, Pa. ....	July 2, "
Planters, seed, seeding apparatus of .....	Geo. Rohr .....	Kennett Square, Pa. ....	July 9, "
Planters, seed, seeding apparatus of .....	Edson Hart .....	Charlestown, Va. ....	July 16, "
Planters, seed .....	Aaron Palmer .....	New Albany, Ind. ....	Aug. 6, "
Planters, seed, seeding, roller of a .....	Sam'l Cannon .....	Brockport, N. Y. ....	Sept. 10, "
Planters, seed .....	Sam'l & Morton Pennock .....	New Richmond, Pa. ....	Nov. 12, "
Planters, seed .....	Deeter B. Rhodes .....	Kennett Square, Pa. ....	Dec. 10, "
Planters, seed .....	John Signer and Thomas N. Shipton .....	Concord, N. Y. ....	Dec. 10, "
Planters, seed .....	Joseph W. Fawkes .....	Kishacoquillas valley Pa. ....	Dec. 10, "
Plants, machines for fumigating ..	David S. Brown .....	Bart, Pa. ....	Dec. 17, "
Ploughs, corn .....	Robert J. King .....	Surry, England ....	Sep. 27, "
Plough and clevis .....	Ira Reynolds .....	Lancaster, Pa. ....	Mar. 25, "
Plough cleaners .....	James F. Reasin .....	West Liberty, O. ....	Mar. 26, "
Plough, corn, adjustable shares of ..	David Wolf .....	Darlington, Md. ....	Apr. 9, "
Plough cleaners .....	Daniel D. Gitt .....	North Lebanon, Pa. ....	Apr. 23, "
Ploughs, gang .....	Joseph D. Hope .....	Butler Township, Pa. ....	May 7, "
Ploughs, hill side .....	Mark L. Chase, ass'or to Wm. L. Chase .....	Philadelphia, Pa. ....	June 4, "
Ploughs, fastening the shoes of hill side .....	Wm. L. Chase .....	Frankfort, Me. ....	July 16, "
Plough cleaner .....	David Warren .....	Boston, Mass. ....	July 16, "
Ploughs, spring beams to .....	William Morrison .....	Boston, Mass. ....	July 22, "
Ploughs, sub-soil .....	Wm. C. Pagett .....	Gettysburg, Pa. ....	Sept. 10, "
Ploughs, gang .....	Henry Cowing .....	Carlisle, Pa. ....	Oct. 22, "
Rakes, hay, spring teeth of .....	Zephaniah Breed .....	Xenia, O. ....	Oct. 22, "
		New Orleans, La. ....	Nov. 26, "
		Ware, N. H. ....	June 18, "



INVENTIONS OR DISCOVERIES.	PATENTRES.	RESIDENCE.	DATE OF PATENT.
Rakes, hay fastenings of.....	Orange W. Hogle.....	Somerset, N. Y.....	Sep. 3, 1850
Rakes, horse.....	Alvan Hovey.....	Brookfield, Vt.....	Feb. 12, "
Rakes, horse.....	Harry W. Sabin.....	Canandaigua.....	Dec. 3, "
Seed planters, sliders for.....	Robert J. Colvin.....	Lancaster, Pa.....	Oct. 1, "
Seed planters.....	David Eberly.....	Strasburg, Pa.....	Oct. 8, "
Seeding apparatus, gearing and un- gearing.....	David Eberly.....	Strasburg, Pa.....	Jan. 22, "
Seeding, apparatus for, seed plan- ter.....	Gervis S. Gardner, ass'or to G. S. Gardner & G.		
Seeding cylinders, oscillating.....	Rohr.....	Charlestown, Va....	Oct. 8, "
	David E. Rohr.....	Charlestown, Va....	Dec. 17, "
Straw carriers.....	Wm. Pierpont.....	Salem, N. J.....	May 7, "
Straw cutters.....	Reuben Daniels.....	Woodstock, Vt.....	July 2, "
Straw cutters.....	Isaac Woodward.....	Mechanicsburg, O..	Oct. 1, "
Straw cutters.....	A. S. Macomber.....	Bennington, Vt.....	Nov. 5, "
Straw cutters, mounting the knife of.....	John R. Nelson.....	Knoxville, Tenn....	June 25, "
Straw cutters, feeders of a.....	John E. Erb.....	Baltimore, Md.....	July 21, "
Straw cutters, feeding apparatus of	David Stiles, jr.....	Middleton, Mass...	July 16, "
Straw machines, for cutting.....	Harry Camp.....	Newton, Ga.....	Aug. 27, "
Straw cutters, adjustment of knives in.....	Joseph W. Webb, ass'or to Benj. Gould.....	Aurora, N. Y.....	Oct. 8, "
Straw cutters, feeding apparatus for.....	Henry W. Bertholf.....	Sugar Loaf, N. Y...	Oct. 22, "
Thrasher, clover, setting the teeth on the concave of a.....	Jonathan Hibbs.....	Bristol, Pa.....	July 2, "
Thrashers, endless for.....	Adkins Nash.....	Logansport, Ind....	Apr. 9, "
Thrashing harvesters.....	Samuel S. Rembert.....	Memphis, Tenn....	Mar. 26, "
Thrashing machines.....	A. S. Pelton.....	Clinton, Conn.....	May 14, "
Thrashing machines.....	Elisha S. Snyder.....	Charlestown, Va....	June 11, "
Thrashing machine.....	Darius W. Harris.....	Yorkshire, N. Y....	Sept. 24, "
Thrashing machine, and grain cleaners, endless aprons for....	Ashley Townsend.....	Pavilion, N. Y.....	Oct. 1, "
Tobacco, stems, curing—see class XXII.....			
Vegetable cutter.....	Reuben Daniels.....	Woodstock, Vt.....	Oct. 1, "
Winnowing machines.....	Abraham Straus.....	Milton, Pa.....	Jan. 15, "
Winnowing machines.....	J. G. Goshen.....	Shirleysburg, Pa....	Oct. 29, "

CLASS II.—METALLURGY, and Manufacture of Metals and Instruments therefor.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Alloys for points of lightning rods. see class I.....			
Amalgamator, reimmersion.....	Joseph R. Miller.....	Fredericksburg, Va.	July 2, 1850
Auger, handle.....	Gelston Sanford.....	Ellenville, N. J.....	Oct. 1, "
Blast pipes, for conveying heated air and gases to furnaces.....	Ransom Cook.....	Saratoga springs, NY	Mar. 26, "
Blind and shutter opener and fas- tener.....	Jabez F. Lawrence and Luke A. Farnsworth..	Claremont, N. H....	April 2, "
Blind and skat operator.....	David R. Williams.....	Prospect, Conn.....	Mar. 19, "
Blowers, hydraulic, for furnaces, &c.—see class XI, "Hydraulic, &c.".....			
Bolts, rivets, &c., machines for heading.....	John Van Brocklin.....	Middleport, N. Y....	Aug. 20, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bolt and rivet machine.....	William E. Ward .....	Port Chester, N. Y.	July 30, 1850
Buckles—see class XVI. ....			
Car wheels, apparatus for regulating the construction of.....	Samuel Truscott.....	Columbia, Pa.....	July 16, "
Casting large kettles, metallic flask for.....	William Kelly.....	Edyville, Ky.....	Dec. 3, "
Casting rolls, method of giving rotary motion to fluid iron in ....	John C. Parry .....	Pittsburg, Pa.....	May 21, "
Castings, hollow, method of loosening metallic cores from .....	John C. Parry.....	Pittsburg, Pa.....	Dec. 24, "
Cores for castings, composition for making.....	Edward Rees.....	Cincinnati, O.....	Dec. 17, "
Cores for casting, machines for making and holding.....	Luther H. Crocker.....	Cincinnati, O.....	Oct. 22, "
Cutters, machines for forming rotary.....	Andrew Jennings .....	Fall River, Mass....	Mar. 26, "
Door spring.....	Amos Westcott.....	Syracuse, N. Y.....	Oct. 1, "
Door springs, adjustable cord hook for.....	William B. Barnard ....	Bristol, Conn.....	Mar. 5, "
Door springs and levers, arrangement of.....	William B. Barnard.....	Bristol, Conn.....	April 9, "
Drilling machine, self-acting adjustable feed gear for.....	Allen R. Morrill and Hiram Baldwin .....	Nashville, N. H....	Aug. 27, "
Eaves, trough and gutter machine.	John Lee .....	Wellsville, O.....	Oct. 8, "
Eyelts, machine for making.....	Lucien E. Hicks, ass'nor to Wm. A. Churchill and James Stanley....	Berlin, Conn.....	Dec. 17, "
Fastener and mover, blind and shutter .....	Wm. Maguire.....	Cincinnati, O.....	Jan. 1, "
Fasteners, and window shutter openers, method of bolting in..	Samuel B. Snedaker.....	Cincinnati, O.....	Feb. 12, "
Fastener, combined shutter and sash.....	Thomas Harvey.....	Baltimore, Md.....	April 16, "
Fastener, sash.....	William H. Lazen.....	Hartford, Conn.....	Dec. 17, "
Gold, bullion, process of reducing	Richard S. McCulloh ...	Princeton, N. J.....	Sep. 24, "
Gold, machine for beating .....	Wm. Vine and James H. Ashmead .....	Hartford, Conn.....	Aug. 6, "
Gold, processes for amalgamating; see class IV. ....			
Gold, process for refining.....	James C. Booth .....	Philadelphia, Pa....	Sep. 24, "
Gold washer, cylinder and trough.	Thomas M. Collins.....	Marion, Ark.....	May 14, "
Gold washers, method of constructing the sections of .....	Russel Burton.....	Rome, N. Y. ....	Mar. 26, "
Gold washing, double acting rocker for.....	Arnold Buffum and Philip Thorpe .....	New York .....	Oct. 1, "
Hammer, direct action, steam ....	John H. Towne, ass'nor to S. V. Merrick.....	Philadelphia, Pa....	Sep. 3, "
Hammer, forge, attachment of the to its helve.....	Daniel Hicks .....	Duncansville, Pa....	April 2, "
Horse shoe, machinery.....	Samuel S. Greene .....	Lowell, Mass.....	Nov. 12, "
Iron, coating with copper or its alloy .....	Ebenezer G. Pomeroy ...	St. Louis, Mo.....	Jan. 8, "
Iron, wrought, method of making directly from the ore .....	Alexander Dickerson....	Newark, N. J.....	July 22, "
Jack, chains, machine for making.	Charles Atwood and Geo. Kellogg.....	Birmingham, Conn.	Nov. 12, "
Knives, spiral, machine for grinding.....	Silas Stevens, ass'nor to Geo. Forbes.....	E. Brookfield, Mass.	May 21, "
Lathe for turning a peculiar species of curve.....	Henry G. Thompson ...	New York, N. Y....	Apr. 23, "
Lock, bolt for shutters .....	Joseph Nock.....	Philadelphia, Pa....	July 2, "
Locking, portable safes to the floor—see class XXII. ....			
Lock, revolving plate and tumbler	Lewis Jennings.....	New York, N. Y....	April 2, "
Locks, prison, attachment of.....	Edward Kershaw .....	Boston, Mass.....	July 30, "
Metal, sheet, &c., machine for cutting .....	Stephen P. Ruggles.....	Boston, Mass.....	Aug. 20, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Metal, sheet, machinery for cutting and bending.....	Joseph F. Flanders .....	Newburyport, Mass.	Dec. 17, 1850
Nail plate, feeder and turner .....	Melville Otis .....	E. Bridgewater, "	Dec. 3, "
Nail plate, machines for feeding ..	Frederick J. Ayers.....	St. John, N. B.....	Nov. 26, "
Nails, method of making by rolling*.....	Elisha H. Collier .....	London, England...	June 16, "
Punching between rollers.....	Richard Montgomery...	New York, N. Y....	Feb. 5, "
Rocker, submerged for separating ores.....	Oliver Edes.....	Plymouth, Mass....	April 23, "
Sash, balancing.....	Hiram C. Brown .....	Xenia, Ohio.....	May 14, "
Sash, bearer elastic roller.....	Julius A. Pease.....	Philadelphia, Pa....	April 9, "
Sash stopper .....	George H. Gray, Sr....	Clinton, Miss .....	April 2, "
Sash stopper .....	Charles C. Cameron.....	Harper's Ferry, Va.	July 2, "
Sash stopper, arrangement of.....	Nathaniel Myers & Frederick C. Smith.....	Charlestown, Va....	June 25, "
Sash, stopper, spiral spring.....	William R. Barnard.....	Harper's Ferry, Va.	Mar. 12, "
Sash, stopper, spring inclined plane and roller.....	Seth E. Winslow.....	Bristol, Conn.....	Apr. 2, "
Sash stopper, friction roller.....	Joseph Haynard.....	Kensington, Pa....	Feb. 5, "
Screws, machines for cutting.....	Thos. J. Sloan.....	Philadelphia, Pa....	July 9, "
Screws, wood, machines for nicking the heads of.....	Thos. J. Sloan.....	New York, N. Y....	Oct. 29, "
Screw threading machines.....	Thos. J. Sloan.....	New York, N. Y....	Nov. 26, "
Shafts, etc., of sheet iron, method of making.....	Chas. F. Fisher.....	New Orleans, La....	June 4, "
Shutters, the hinge of rolling iron.	A. Livingston Johnson..	Baltimore, Md.....	June 25, "
Shutters, window chain and flanges apparatus for opening and closing	George Welsh.....	Washington, D. C..	Jan. 22, "
Smiths, strikers.....	Melchi Scott.....	Clayville, Pa.....	Sept. 10, "
Spike machine.....	Ammi M. George.....	Nashua, N. H.....	June 18, "
Spike machines.....	Moore Hardaway.....	Troy, N. Y.....	July 16, "
Spike machines.....	William Blake.....	Boston, Mass.....	Sept. 17, "
Spike machines.....	Horatio N. Swift.....	Boonton, N. J.....	Oct. 29, "
Spike machines, movement of the pointing die in.....	Edmund Sawyer.....	Boston, Mass.....	Mar. 19, "
Steel cast, process for making .....	Joseph Dixon.....	Jersey City, N. J....	April 9, "
Tacks, carpet, machine for forming washers and attaching them to..	Jason G. Howard.....	North Easton, Mass.	June 25, "
Tin cutting and bending machines, arrangement of the bending rollers in.....	William H. Horton.....	Newbury.....	
Tubes, copper, machinery for making.....	Edward Hamilton.....	Bridgeport, Conn....	May 28, "
Tubes, method of forming sheet metal.....	Wm. Ostrander and Wm. Webster.....	New York, N. Y....	Mar. 17, "
Tubes, of sheet metal, machine for forming.....	Joseph Stout and Jas. T. Staunton.....	Waynesville, O.....	July 30, "
Tuyere .....	John Pawling.....	Morgantown, Pa....	Jan. 22, "
Tuyers, devices for discharging ashes from.....	James A. Maynerd.....	Boston, Mass.....	May 21, "
Vises, parallel method of working the pawl in.....	Jasper Johnson.....	Genesee, N. Y.....	April 9, "
Window blinds and their slats, apparatus for operating.....	John Jones.....	Clyde, N. Y.....	Dec. 24, "
Wrench, revolving jaw.....	Nathl. Colver ass'or to N. Colver and William S. Damrell .....	Boston, Mass.....	May 14, "

\* In England, September 11, 1845.



CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including  
Machines for Preparing Fibres of Wool, Cotton, Silk, Fur, Paper, &c.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bobbins upon spindles, driving...	Oliver Pearl .....	Essex Co., Mass...	Jan. 29, 1830
Carding and mixing wool and cotton.....	Stephen H. Adams and John A. Wood.....	Cohoes, N. Y.....	June 11, "
Carding and drawing wool, engines for .....	Charles Jackson and Jas. Moir .....	Cazenovia, N. Y....	Feb. 5, "
Carding, machines for preparing bats for felting.....	Samuel G. Blackman....	Norwalk, Conn.....	Feb. 5, "
Carpets, manufacture of two and three ply.....	Alexander Smith.....	West Farms, N. Y..	Dec. 10, "
Cloth, apparatus for stretching and smoothing.....	John Butcher.....	Lowell, Mass.....	Nov. 5, "
Cloth, instruments for measuring.	E. F. Whiton .....	West Stafford, Conn.	April 23, "
Cloth, machinery for folding.....	Augustus C. Carey and Dan'l C. Bagley.....	Amesburg, Conn....	Feb. 12, "
Cloth, machines for shearing.....	Amasa Woolson.....	Springfield, Vt.....	May 28, "
Cloth, measuring on looms.....	John G. Webster, ass'r to John W. Robertson and John G. Webster..	Lowell, Mass.....	Feb. 19, "
Cloth, wide machinery for double folding.....	Zachariah Allen.....	Providence, R. I....	July 16, "
Cordage, cotton, machinery for making.....	Franklin Slaughter and David Perry.....	Fredericksburg, Va..	Jan. 1, "
Cordage, cotton, machinery for making.....	Franklin Slaughter and David Perry.....	Fredericksburg, Va..	Jan. 8, "
Cordage, processes for rendering unflammable.....	M. Y. Johnson, adm'r of James H. Johnson....	Galena, Ill.....	Nov. 26, "
Cotton batting, apparatus for sizing and drying.....	Elias P. Rider.....	New York, N. Y....	July 30, "
Cotton, machinery for ginning or picking .....	Francis A. Calvert.....	Lowell, Mass.....	Sept. 17, "
Drawing rollers, regulators for....	Whiting Hayden.....	Windham, Conn....	Mar. 12, "
Electricity, removing from wool in the process of manufacture.....	Joseph Metcalf.....	Worcester, Mass...	Sept. 24, "
Flax and hemp, machinery for dressing.....	William W. Grant.....	Providence Co., R.I.	Mar. 5, "
Fliers and spindle, arrangement of	John Dermond.....	Paterson, N. Y....	Feb. 12, "
Fulling cloth, machinery for .....	Chas. A. Reed and Thos. Cotter .....	Wash'n Mills, N. Y.	Sept. 24, "
Fulling mills.....	John C. Millar.....	Springfield, Mass...	Aug. 20, "
Gins, cotton.....	John Du Bois.....	Greensboro', Ala....	Jan. 8, "
Gins, cotton.....	Stephen R. Parkhurst...	New York, N. Y....	April 23, "
Harness, weavers, machinery for dressing.....	Kasimir Vogel.....	Westbrook, Me....	Aug. 6, "
Heddles, wire, machinery for making.....	Milton Finkle.....	Utica, N. Y.....	April 9, "
Hemp brakes.....	Jonathan Crane and F. H. Hamilton .....	Schenectady, N. Y..	Jan. 1, "
Hemp, drawing and parting fibres of.....	O. S. Leavitt .....	Maysville, Ky.....	Sept. 24, "
Hemp, machines for cutting.....	J. Locke Hardeman....	Arrow Rocke, Me..	Aug. 20, "
Hemp, scutchers.....	Farwell H. Hamilton and Thos. Bullock.....	Schenectady, N. Y..	Jan. 1, "
Knitting machines .....	Joseph Hollen.....	White township, Pa.	July 16, "
Loom .....	Halvor Halvorson, ass'or to Wm. M. Chase....	Northampton, Mass.	Oct. 1, "
Loom, power.....	Enoch Burt.....	Hartford, Conn.....	
Looms.....	Amos H. Boyd.....	Saco, Me. ....	Oct. 15, "
Looms for figured fabrics*.....	Samuel Eccles.....	Kensington, Pa....	Mar. 5, "
Looms for piled fabrics.....	James Turnbull, Jr., and John Turnbull.....	Simsbury, Conn....	Jan. 29, "
Looms for weaving cut pile fabrics	Mertown C. Bryant.....	Lowell, Mass.....	June 25, "

\* Antedated Dec. 22, 1849.



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Looms for weaving figured fabrics	Samuel T. Thomas and Edwd. Everett.....	Lowell, Mass.....	Dec. 24, 1850
Looms for weaving figured goods.	Avery Babbett.....	Lawrence, Mass.....	
Looms for weaving piled fabrics*.	John Johnson, ass'or to Elias Johnson.....	Auburn, N. Y.....	Oct. 8, "
Looms for weaving piled fabrics..	Mertown C. Bryant.....	Troy, N. Y.....	Mar. 12, "
Looms for weaving tapestry and Brussels carpets.....		Lowell, Mass.....	Mar. 19, "
Looms, hand.....	Erastus B. Bigelow.....	Clinton, Mass.....	Sept. 24, "
Looms, let off motion of.....	John G. Garretson.....	Salem, Iowa.....	May 21, "
Looms, operating shuttle boxes in	Jonathan Knowles.....	Buffalo, N. Y.....	April 30, "
	Robert Burns Goodyer & Benj. Twist, ass'or to Alfred Jenks.....	Philadelphia, Pa....	
		Manayunk, Pa....	Jan. 1, "
Looms, power.....	John Shuttleworth.....	Bridgesburgh, Pa....	
Looms, shuttle motion of.....	Oliver A. Kelly.....	Frankford, Pa.....	May 21, "
Looms, shuttle motions in.....	Thomas T. Wilcox.....	Woonsocket, R. I..	June 4, "
Looms, stop motion for.....	Elijah Hall.....	Norwich, Conn.....	Nov. 26, "
Paper, machinery for measuring pulp in the manufacture of.....		Cabotsville, Mass...	Sept. 24, "
Pile for rugs, &c., preparation of.	Henry Pohl.....	Paterson, N. J.....	July 9, "
	James Taylor, ass'or to John Joseph and Francis Crossley.....	Loch Winnock, Scot-land.....	May 28, "
Ropes, machinery for making....	Henry Evans.....	Halifax.....	
Sewing machines.....	David M. Smith, ass'or to Thomas Chadbourne..	N. Bedford, Mass..	Sep. 24, "
		Springfield, Vt.....	April 16, "
Sewing machines.....	O. L. Reynolds.....	Concord, N. H.....	
Sewing machines.....	Bartholomy Thimonnier, Sr., ass'or to Philip May.....	Dover, N. H.....	May 14, "
		France.....	Sept. 3, "
Sewing machine.....	John Bachelder.....	London, England...	
Sewing machines.....	Allen B. Wilson.....	Boston, Mass.....	Sept. 24, "
Sewing machines.....	Frederick R. Robinson..	Pittsfield, Mass.....	Nov. 12, "
Shuttle, weavers'.....	Wm. Markland and Jos. Milner.....	Boston, Mass.....	Dec. 10, "
		Lowell, Mass.....	Oct. 1, "
Silk, &c., machinery for doubling and twisting.....	Joseph Conant & Lucius Dimmock.....	Northampton, Mass.	Dec. 17, "
Speeder, counter twist.....	Jesse Whitehead.....	Manchester, Va.....	July 30, "
Spindles and bobbins for spinning	Josiah G. Reed.....	Paterson, N. J.....	Jan. 15, "
Spinners cop, operating the coping rail of.....	Warren Rouse.....	Taunton, Mass.....	Nov. 5, "
Spinners, hand.....	David Current.....	Crittenden, Ky.....	Sep. 3, "
Spinning machines, preventing fibres from winding on drawing rollers in.....	John C. Dodge.....		
Spooling, machinery for.....		Dodgeville, Mass...	May 14, "
Temples used in weaving double cloth.....	Avery Babbett.....	Auburn, N. Y.....	Feb. 5, "
	Stephen Everett.....	Biddeford, Me.....	April 2, "
Yarn, machinery for doubling and twisting.....	Moses Hey.....	Springfield, Pa.....	Oct. 8, "

\* In England, Mar. 9, 1849.

† In England, Oct. 10, 1845.



CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including *Medicine, Dying, Color-making, Distilling, Soap and Candle making, Mortars, Cements, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Alloys for points and lightning rods.....	James Spratt.....	Cincinnati, O.....	Jan. 8, 1850
Alum, process for manufacturing..	Jacob H. Wurtz.....	New York, N. Y....	Oct. 22, "
Candles, mould apparatus.....	Herman Camp.....	Dunkirk, N. Y.....	Jan. 22, "
Candles, manufacture of.....	James G. Davis, ass'or to A. E. Warner and Jas. G. Davis.....	Buffalo, N. Y.....	Aug. 13, "
Composition of, covering hams...	Hosea Birkings.....	Beardstown, Ill.....	April 9, "
Composition for enamelling hollow ware*.....	Chas. E. & Chas H. Paris	Paris, France.....	Mar. 5, "
Compound for imparting a gloss to cloths†.....	Wm. D. Beaumont.....	Baltimore, Md.....	Oct. 8, "
Compounds for sizing, for warps on yarns.....	Wm. Mallerd.....	Providence, R. I....	July 16, "
Curing meat, process for.....	George Starkweather....	Hartford, Conn.....	Nov. 5, "
Curing tobacco stems—see class XXII, "Tobacco".....			
Distilling oleaginous matter‡.....	Anthony M. Poisat and David C. Knabb.....	Paris, France.....	Feb. 26, "
Distilling spirits of turpentine....	Chas. J. Meinicke.....	New York, N. Y....	July 30, "
Fats and oils, hardening.....	Carl W. Schindler.....	New York, N. Y....	Nov. 5, "
Gas, coal, purifying.....	Joseph A. Sabbaton.....	Albany, N. Y.....	July 30, "
Gases, preparing illuminating§.....	Stephen White.....	Manchester, Eng....	Jan. 22, "
Gas generating apparatus.....	Christopher F. Brown...	Baltimore, Md.....	Feb. 26, "
Gas, manufacture of illuminating from bitumen.....	Abraham Gesmer.....	Halifax, N. S.....	Jan. 29, "
Gas metres.....	James Long.....	Chicago, Ill.....	Mar. 5, "
Gas metres.....	Thomas W. Lane.....	Woburn, Mass.....	Oct. 8, "
Glucose, process in the manufacture of.....	George Riley.....	New York, N. Y....	Mar. 5, "
Gold, process for amalgamating...	Calvin C. Knowles.....	Lowell, Mass.....	Aug. 6, "
Gutta Percha, process of working.	Samuel F. Armstrong and Chas. J. Gibbert.....	New York, N. Y....	Sept. 17, "
India rubber cloth, process of rolling.....	Francis D. Hayward and John C. Bickford.....	Colchester, Conn....	Mar. 19, "
India rubber springs for cars, &c., manufacture of.....	Fowler N. Ray.....	New York, N. Y....	April 2, "
Indian rubber, use of oxide of tin in the manufacture of.....	John Pridham, ass'or to Horace H. Day.....	N. Brunswick, N. J. New York, N. Y....	Mar. 19, "
Indian rubber, vulcanising.....	Jonathan T. Trotter.....	New York, N. Y....	Dec. 3, "
Oils, filter for.....	Thomas Antisell.....	New York, N. Y....	Nov. 12, "
Oxide of zinc, manufacture of the§.	Edme Jean Leclair and Jean Joseph Ernest Barnrel.....	Paris, France.....	May 17, "
Paint, process of making from bituminous coal.....	Charles Mortimer.....	Philadelphia, Pa....	April 9, "
Paints, drying.....	Aquilla Jones.....	New York, N. Y....	Nov. 12, "
Particoloring yarn, apparatus for..	Alexander Smith.....	West Farms, N. Y..	June 18, "
Pill boxes, machinery for making—see class XIV.....			
Preparing wheat for grinding....	Joseph W. Carpenter....	Pontiac, Mich.....	Sept. 17, "
Preserving wood, process for ¶...	Chas. Payne.....	Sth. Lambeth, Eng..	May 28, "
Stannates of potash and soda, process for making**.....	James Young.....	Manchester, Eng....	Aug. 20, "
Starch from maize, manufacture of	Thomas Bragg.....	West Milton, O.....	Dec. 24, "
Sugar, defecating.....	Robert de Massey.....	Bocourt, near Saint Quentin, France..	May 7, "
Sugar, manufacture of ††.....	Louis Henry F. Nelsens, ass'or to Louis de Saulles	Lorain, Belgium.... New Orleans, La...	Jan. 29, "
Sugars, draining‡‡.....	Conrad W. Finsel.....	Bristol, England,...	Sept. 3, "

\*In England, Jan. 23, 1849.

†Antedated July 26, 1850.

‡In France, Mar. 9, 1849.

§In England, Mar. 26, 1849.

¶In France, Dec. 31, 1845.

¶In England, Jan. 9, 1842.

\*\*In England, Dec. 9, 1848.

††In Belgium, Aug. 15, 1849.

‡‡In England, Oct. 12, 1849.



**CLASS V.—CALORIFIC, comprising Lamps, Fire-places, Stoves, Grates, Furnaces for heating Buildings, Cooking Apparatus, Preparation of Fuel, &c.**

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bagasse, machine for drying.....	James H. Dakin.....	Baton Rouge, La. . .	May 21, 1850
Blast pipes, for conveying heated air and gases to furnaces—see class II.....			
Burning fluid .....	Ephraim Howe.....	Brooklyn, N. Y.....	Sep. 24, "
Chimney caps.....	Edward Whitley .....	Boston, Mass.....	Mar. 5, "
Chimney caps.....	Michael H. Collins .....	Boston, Mass.....	
Chimney caps.....	Augustus M. Rice, ass'or to H. Lombard and A. M. Rice .....	Boston, Mass.....	Apr. 9, "
Dampers for cleaning stove pipes and regulating the draft in the same.....	Frederick Bleier .....	Pittsburg, Pa.....	Jan. 15, "
Dryers, grain .....	Martin C. Dudley .....	New Orleans, La. . .	Apr. 30, "
Dryers, grain .....	John R. Hoopes.....	W. Philadelphia, Pa.	Aug. 27, "
Dryers, grain.....	Charles S. Snead .....	Louisville, Ky.....	Oct. 1, "
Fire, apparatus for extinguishing*	William H. Phillips.....	Langton Place, Eng.	April 9, "
Fire places and throats of chimnies—construction of.....	Charles W. Russell .....	Washington, D. C..	Mar. 5, "
Firing kilns for pottery ware, black lead crucibles .....	Joseph Dixon .....	Jersey city, N. J....	Mar. 5, "
Furnaces, air heating .....	Henry Adolph Engles...	Cincinnati, O.....	Feb. 12, "
Furnaces, air heating .....	James McGregor .....	Wilton, N. Y.....	Mar. 5, "
Furnaces, air heating .....	Gardner Chilson.....	Boston, Mass.....	Nov. 19, "
Furnaces for calcinizing gypsum..	Benj. Fowler.....	Lubec, Me.....	June 18, "
Furnaces for heating sad irons ...	John T. Davy.....	Troy, N. Y.....	Mar. 12, "
Furnaces, hot air.....	George E. Waring.....	Stanford, Conn.....	Dec. 24, "
Furnaces, portable.....	John P. Hayes .....	Boston, Mass.....	Nov. 5, "
Furnaces, portable.....	Merritt F. Potter .....	Charlemont, Mass..	Jan. 22, "
Furnaces, steam boiler .....	Benj. Crawford, ass'or to Wm. B. English, J. J. Bennett, A. D. Frisbee and B. Crawford.....	Alleghany, Pa.....	Jan. 29, "
Grate, apparatus for raising the, in cooking stoves .....	Benj. K. Maltby, ass'nor to Ira M. Mead.....	Cleveland, O.....	June 18, "
Grates, coal.....	Chauncey D. Greene....	Mogadore, O.....	June 18, "
Grates, coal, agitating .....	Abel Keeney .....	West Troy, N. Y....	Jan. 1, "
Grates, coal, agitating .....	John B. Chollar .....	Carlisle, Pa.....	April 2, "
Grates, fire place.....	Gardner Chilson.....	West Troy, N. Y....	Aug. 27, "
Grates for cooking stoves.....	John T. Davy.....	Boston, Mass.....	June 4, "
Grates, furnaces, coal stirrers for.	William R. Nichols and Barritt C. Boyes.....	Troy, N. Y.....	April 16, "
Heating air by hot water, apparatus for.....	Adrian Janes .....	Philadelphia, Pa....	April 23, "
Lamps for lighting gas burners...	Robert Thompson .....	New York, N. Y....	Jan. 29, "
Lamps, gas, self-generating.....	Sharpless Clayton and Yarnall Bailey.....	Lowell, Mass.....	Dec. 17, "
Lamps, metallic, making the reservoirs of.....		West Chester, Pa....	Aug. 27, "
Lamps, safety.....	P. J. Clark .....	Meriden, Conn.....	May 28, "
Lamps, safety, tubes for.....	John W. Hoffman.....	Southwark, Pa.....	April 23, "
Lamp tubes.....	Franklin Stewart .....	Philadelphia, Pa....	July 2, "
Lids for boiler holes of cooking stoves.....	Isaiah Jennings.....	New York, N. Y....	July 9, "
Oil cans—see class XIII.....	Tho's G. Clinton & Geo. H. & Edw'd H. Knight	Cincinnati, O.....	Feb. 19, "
Ovens, bake.....	Hosea Ball.....	Philadelphia, Pa....	Nov. 19, "
Ovens, heating, elevated.....	P. A. Palmer.....	Le Roy, N. Y.....	Sep. 24, "
Ranges, cooking.....	Frederick H. Stimpson..	Boston, Mass.....	Mar. 5, "
Ranges, cooking and air heating, furnaces connected therewith...	James MacGregor, jr....		
Ranges, cooking, and heating air.	Elias T. Beers.....	New York, N. Y....	Mar. 5, "
Ranges, cooking, water backs for.	H. H. and Frederick H. Stimpson .....	Honesdale, Pa. ....	Apr. 2, "
		Boston, Mass.....	May 28, "

\* In England, December 4, 1844.



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Registers, hot air.....	George Pollock.....	Roxbury, Mass.....	Aug. 20, 1850
Registers, warm air.....	Peter G. Woodside.....	Philadelphia, Pa....	Oct. 8, "
Stove pipes, joints of.....	James N. Warner.....	Buffalo, N. Y.....	May 14, "
Stoves.....	Peter Sweeney.....	Buffalo, N. Y.....	Feb. 26, "
Stoves.....	Anson Atwood.....	Troy, N. Y.....	May 14, "
Stoves.....	Sherman S. Jewett and F. H. Root.....	Buffalo, N. Y.....	Sep. 3, "
Stoves, air heating.....	Perry Goodhue.....	Cincinnati, O.....	Mar. 12, "
Stoves, air heating.....	James L. Catheart.....	Washington, D. C..	May 17, "
Stoves, coal, for roasting, baking and boiling.....	Tho's G. Clinton, Geo. H. and Edward H. Knight.....	Cincinnati, O.....	Aug. 27, "
Stoves, cooking.....	Charles M. Nelson.....	Cincinnati, O.....	Mar. 5, "
Stoves, cooking.....	Hosea H. Hartley.....	Cincinnati, O.....	Mar. 19, "
Stoves, cooking.....	William Abendroth.....	Port Chester, N. Y..	April 23, "
Stoves, cooking.....	Jordan L. Mott.....	New York, N. Y....	May 7, "
Stoves, cooking.....	James R. Hyde.....	Troy, N. Y.....	May 7, "
Stoves, cooking.....	Jordan L. Mott.....	New York, N. Y....	May 14, "
Stoves, cooking.....	Abraham Keagy.....	Mid. Woodbury, Pa	June 25, "
Stoves, cooking.....	James White.....	Milton, Pa.....	Aug. 6, "
Stoves, cooking.....	Samuel Pierce.....	Troy, N. Y.....	Nov. 12, "
Stoves, cooking.....	Loftes Wood.....	New York, N. Y....	Nov. 26, "
Stoves, cooking, arrangement of dampers in.....	Henry L. Sheperd.....	Dayton, O.....	Aug. 6, "
Stoves, cooking, construction of..	S. H. Ransom.....	Albany, N. Y.....	July 2, "
Stoves, double, cooking.....	Henry Jackson.....	Evansville, Ind.....	Apr. 23, "
Stoves, double oven, cooking.....	James MacGregor, jr....	Wilton, N. Y.....	Mar. 19, "
Stoves, Franklin; blowers of.....	David Steuart, ass'nor to Wm. P. Cresson.....	Philadelphia, Pa....	Aug. 27, "
Stoves, parlor.....	Gardner Chilson.....	Boston, Mass.....	June 18, "
Stoves, parlor, air heating.....	Lemuel W. Gosnell.....	Baltimore, Md. ....	April 2, "
Stoves, with circular shaking grate	Edward B. Finch.....	Peekskill, N. Y.....	Aug. 27, "
Ventilating railroad cars.....	James Cunningham.....	Reading, Pa.....	Mar. 12, "
Ventilating railroad cars.....	Hezekiah Bradford and Ephraim Morris.....	New York, N. Y....	June 4, "
Ventilators, ship.....	Warren Robinson.....	Lebanon, Conn.....	Aug. 13, "
Ventilators, ship.....	Ralph Bulkley.....	New York, N. Y....	Nov. 26, "

CLASS VI.—STEAM AND GAS ENGINES, including Boilers and Furnaces therefor, and parts thereof.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Air engines, method of distributing the air over the heating and cooling surfaces of.....	Ernst Backup.....	New York, N. Y....	July 2, 1850
Boiler, cupola and grate combined.	Loftes Wood.....	New York, N. Y....	Nov. 26, "
Boiler feeder, balanced.....	William D. Allen.....	Durhamville, N. Y..	Dec. 10, "
Boiler, steam*.....	Richard E. Dibble.....	New York, N. Y....	Aug. 21, "
Boilers, corrugated.....	Richard Montgomery...	New York, N. Y....	Oct. 29, "
Boilers, method of applying fusible metal to.....	Edward H. Ashcroft....	Boston, Mass.....	Mar. 17, "
Boilers, steam.....	Frederick F. Dimpfel....	Philadelphia, Pa....	July 16, "
Boilers, steam, galvanic regulators for—see class VIII, "Galvanic regulators, &c.".....			
Boilers, steam, registers for.....	James D. Rice.....	Philadelphia, Pa....	Aug. 20, "

\*Antedated July 20, 1850.



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Boilers, steam, the alarm and indicator for.....	Joseph Dilks.....	Philadelphia, Pa....	Dec. 3, 1850
Condensers of steam engines.....	Ethan Baldwin.....	Philadelphia, Pa....	July 9, "
Condensers, surface for steam engines.....	Joseph P. Poisson.....	New York, N. Y....	Apr. 2, "
Cut off motion for puppet valves.....	Samuel H. Gilman.....	Cincinnati, O.....	Dec. 10, "
Cylinder, steam, exhaust passages for.....	George Shield.....	Cincinnati, O.....	Sep. 10, "
Engines, horizontal, expansion gear for.....	Samuel H. Gilman.....	Cincinnati, O.....	Dec. 17, "
Engine, steam, arrangement of...	Richard F. Loper & John W. Nystrom.....	Philadelphia, Pa....	Dec. 17, "
Furnaces—see class V.			
Furnaces for steam boilers.....	F. P. Dimpfel.....	Philadelphia, Pa....	Nov. 5, "
Locomotive engines, apparatus for reversing or stopping.....	James Cunningham.....	Reading, Pa.....	Oct. 22, "
Locomotive engines for working heavy grades, boilers and gearing of.....	George Escol Sellers.....	Cincinnati, O.....	July 9, "
Packing metal, compound, hard and soft.....	Andrew Fulton.....	Pittsburg, Pa.....	Mar. 25, "
Safety apparatus for steam boilers.....	John C. Sement and John Workman.....	Philadelphia, Pa....	Aug. 13, "
Spark arresters.....	James Radley and John W. Hunter.....	New York, N. Y....	Jan. 22, "
Spark arresters.....	Samuel Swett.....	New York, N. Y....	Nov. 19, "
Steam boilers, interior arrangement of.....	Sylvanus Knight.....	Winchester, Ind....	Mar. 12, "
Steam, method of employing the exhaust.....	Geo. H. Hoagland.....	Piermont, N. Y....	Mar. 19, "
Valve gear for steam engines.....	Geo B. Milner.....	Houston, Texas....	July 30, "
Valve gridiron slide.....	William W. Hubbard...	Boston, Mass.....	Jan. 22, "
Valves for governors.....	Junius and Alfred Judson ass'rs to Junius Judson	Rochester, N. Y....	Nov. 5, "
Valves, oscillating of steam engines.....	Thomas C. Theaker.....	Mansfield, O.....	May 7, "
Valves, puppet, expansion gear for.....	Thomas McLaughlin....	New York, N. Y....	Jan. 29, "
Valves, slide, arrangement of several in the same steam chest...	Cyrus Richardson.....	Woburn, Mass.....	May 7, "

**CLASS VII.—NAVIGATION and Maritime Implements, comprising all Vessels for conveyance on water, their construction, rigging and propulsion, Diving Dresses, Life Preservers, &c.**

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Cordage, &c.—see class III.			
Grummet strap.....	Eli F. Southward.....	Wellsfleet, Mass....	Oct. 8, 1850
Paddle wheels, opening and closing bucket for.....	George Fingie.....	New York, N. Y....	Aug. 20, "
Propeller, centripetal.....	John W. Nystrom.....	Philadelphia, Pa....	Mar. 19, "
Propeller, shell.....	James Trees.....	Salem, Pa.....	May 14, "
Propellers and chimneys for canal boats, arrangement of.....	Benjamin M. Smith.....	Ridgeway, N. Y....	April 23, "
Propellers, screw arrangement and connection of.....	Patrick L. Derlan.....	Reading, Pa.....	May 21, "
Propelling boats in shallow water, method of.....	John Dougherty.....	Mount Union, Pa....	Aug. 20, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Sewing mallets.....	Thomas Batty.....	New York, N. Y....	Aug. 20, 1850
Ship's timbers, instruments for laying down curves of.....	Charles Scales.....	Bath, Me.....	Dec. 17, "
Steering apparatus.....	Phineas P. Quimby.....	Belfast, Me.....	Mar. 19, "
Steering apparatus.....	Charles F. Brown.....	Warren, R. I.....	July 22, "
Steering apparatus, parallelogram.	Jesse Reed.....	Marshfield, Mass...	Feb. 26, "
Stoppers, cat head and shank painter.....	Charles Perley.....	New York, N. Y....	April 2, "
Trusses, method of attaching yards to.....	Tilgath Odeon.....	Portsmouth, Va....	Aug. 27, "
Vessels, apparatus attached to for indicating the depth of water...	Henry B. Sommers.....	Ithaca, N. Y.....	Dec. 10, "
Vessels, apparatus for trimming..	Evan L. Evans.....	Mount Holly, N. J..	Mar. 19, "
Vessels' holds, apparatus for measuring the depth of water in....	Nelson Edwards.....	Chittenden Co., Vt..	Mar. 5, "
Vessels, method of carrying over shoals.....	J. A. Winslow.....	Roxbury, Mass....	Aug. 20, "
Vessels, method of fitting the bows of.....	Benjamin Barstow.....	New York, N. Y....	July 2, "
Vessels, model for.....	Solomon Andrews.....	Perth Amboy, N. J..	June 25, "
Vessels, submarine.....	Lambert Alexander.....	France.....	Sep. 3, "
Windlass jigger—see class XII.			

CLASS VIII.—MATHEMATICAL, *Philosophical and Optical Instruments, including Clocks, Chronometers, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Calculating machines.....	Du Bois D. Parmelee.....	New Paltz, N. Y....	Feb. 5, 1850
Callipers.....	Wm. W. Smith.....	Boston, Mass.....	
Compasses for measuring, joints for.....	Thesdor Altenedor.....	Philadelphia, Pa....	July 16, "
Compasses, surveyors'.....	John Locke.....	Cincinnati, O.....	July 16, "
Dividers, or compasses.....	Dexter H. Chamberlain, ass'or to Charles W. Homer, S. J. M. Hor- ner, and W. G. Ladd..	Boston, Mass..... Cambridge, Mass... Boston, Mass.....	Apr. 9, "
Electro magnetic engines.....	John H. Lillie.....	Joliet, Ill.....	Apr. 16, "
Electro magnetic machines, for shocks.....	Samuel B. Smith.....	New York, N. Y....	June 4, "
Enunciators, electro magnetic, for signals in hotels, &c.....	Charles S. Bulkley.....	Macon, Ga.....	Oct. 29, "
Galvanic regulators for steam boilers*.....	Arthur Dann.....	Dalston, Eng.....	May 28, "
Gauge for water casks—see class XI, "Water casks, &c."			
Level, fluid.....	William G. Ladd, jr....	Cambridge, Mass...	Apr. 9, "
Levels, collimating.....	John Locke.....	Cincinnati, O.....	July 2, "
Lightning conductors, attachments for.....	James Spratt.....	Cincinnati, O.....	Feb. 5, "
Magnetic needles, correcting.....	Calvin Guiteau.....	Syracuse, N. Y....	Mar. 26, "
Rules, board and log.....	Charles B. Hutchinson..	Waterloo, N. Y....	June 4, "
Rules, board and log.....	Benj. M. Van Der Neer.	Clyde, N. Y.....	Apr. 30, "
Telegraph, electric, manipulator..	Austin F. Park.....	Troy, N. Y.....	Aug. 27, "
Telegraphs, electric.....	Wm. S. Thomas.....	Norwich, N. Y....	Feb. 12, "
Telegraphs, electric.....	Geo. H. Horn.....	Boston, Mass.....	June 25, "
Telegraphs, electro chemical.....	W. Westbrook.....	Washington, D. C..	May 28, "
Telegraphs, repeaters for electro magnetic.....	Henry J. Rogers.....	Baltimore, Md.....	
Telescopes, submarine.....	Charles S. Bulkley.....	Macon, Ga.....	Nov. 12, "
	Willard Day.....	Brooklyn, N. Y....	Apr. 16, "

\* In England, October 12, 1848.

† Antedated Sep. 10, 1850.



CLASS IX.—CIVIL ENGINEERING and Architecture, comprising works on Rail and Common Roads, Bridges, Canals, Wharves, Docks, Rivers, Wiers, Dams, and other Internal Improvements, Buildings, Roofs, &c.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Balloons and their appendages— see class XI.			
Blinds, Venitian, suspending.....	Joseph Bohrer.....	Philadelphia, Pa....	June 4, 1850
Bridges, arch, truss for.....	Henry Lanergan.....	Boston, Mass.....	Apr. 23, "
Buildings, iron, construction of the frame, roof and floor of.....	James Bogardus.....	New York, N. Y....	May 7, "
Canals, feed regulators for.....	Charles Ross.....	West Buddick, O....	May 21, "
Chairs, machines for making wrought iron railroad.....	Wm. Van Andear.....	Poughkeepsie, N. Y.	Apr. 30, "
Chair, wrought iron railroad ....	Edward S. Renwick.....	Washington, D. C..	Oct. 22, "
Cornices and mouldings, plaster tool for forming.....	Sylvester Groesbuck ....	New York, N. Y....	Sep. 17, "
Drilling stone, machines for.....	Geo. Fletcher, sr.....	Greensburg, Ind....	Apr. 23, "
Eaves trough and gutter, machine; see class II.			
Embankments, levees, and method of forming.....	Duff Green.....	Dalton, Ga.....	June 11, "
Excavating and conveying earth..	John A. Sprague.....	Dayton, O.....	Oct. 5, "
Excavating auger.....	James Buck.....	Bucksport, Me. ....	Feb. 5, "
Excavating, machines.....	Martin Newman, 2d ....	Lanesboro, Pa. ....	Nov. 19, "
Excavator, the screw.....	Richard Montgomery....	New York, N. Y....	May 7, "
Fences.....	Isaiah Subers.....	Philadelphia co., Pa.	Feb. 19, "
Fences, portable.....	Peter M. Purdy.....	Haysville, O.....	Feb. 19, "
Gates for fences.....	Jesse Bailey.....	Leatherwood, O....	Jan. 15, "
Gates, hanging and operating ....	Thomas Parkinson.....	Naples, N. Y.....	Aug. 6, "
Lewis, lever—see class XIII.			
Lock, bolts, method of operating	Thomas Slight, ass'or to Henry C. Jones.....	Newark, N. J.....	Mar. 12, "
Mantel piece.....	Hiram Tucker.....	Cambridge, Mass...	April 2, "
Piles, &c., method of sinking hol- low by exhausting the air from the interior of the same*.....	Lawrence H. Potts.....	London, Eng.....	Jan. 29, "
Rail, compound tubular.....	Alfred B. Seymour.....	New York, N. Y....	April 16, "
Railings, iron.....	Wm. Hamilton.....		Feb. 26, "
Railings, iron.....	John Krauser, Sommers Crowell, and Cyrus Krauser.....	Reading, Pa.....	Nov. 12, "
Railroad frog, oscillating, self ad- justing.....	John W. Hoffman.....	Philadelphia, Pa....	April 2, "
Rails of railroads, method of se- curing.....	H. H. May.....	Galesburg, Ill.....	Nov. 26, "
Road scrapers, adjustable mouth piece to.....	Shadrach Davis.....	Dartmouth, Mass...	May 7, "
Roads, machine for repairing....	Nathan Potter.....	East Hamburg, N. Y.	June 25, "
Roadway for rail cars and ordina- ry vehicles.....	Jordan L. Mott.....	Mott Haven, N. Y..	Sep. 17, "
Scraper, combination of a guide tooth with an inclined.....	John F. Wood.....	Houma, La. ....	June 18, "
Scrapers, removable teeth for.....	Joseph Sweet.....	Hughesville, Pa....	Apr. 2, "
Stump extractor, wheel and axle .	John Rogers.....	Orleans co., Vt. ....	Jan. 1, "
Wickets, for lock gates.....	John Jack, ass'r to Alfred Bell.....	Nunda, N. Y.....	May 21, "

\*In England, Dec. 5, 1848.



CLASS X.—LAND CONVEYANCE, comprising Carriages, Cars, and other Vehicles used on Roads, and parts thereof.

INVENTIONS OR DISCOVERIES.	PATENTERS.	RESIDENCE.	DATE OF PATENT.
Axles and shafts, bearings for....	Wm. H. Hovey.....	Hartford, Conn.....	Dec. 10, 1850
Axles, mail	Wm. H. Saunders.....	Hastings, N. Y.....	Mar. 5, "
Balloons and their appendages— see class XI.			
Brakes, connection of with cars..	John Kimbell and Har- vey Rice.....	Concord, N. H.....	Jan. 1, "
Brakes for carriages.....	Wm. J. Welch, jr.....	Churchville, Md.....	Mar. 12, "
Boxes and axles, packing.....	Wm. H. Hovey.....	Hartford, Conn.....	Aug. 13, "
Boxes, compound wagon.....	Imla Drake.....	Mansfield, N. J.....	Aug. 20, "
Car couplings.....	Hiram Baldwin.....	Nashville, N. H.....	April 16, "
Car couplings.....	David S. Neale.....	Lynn, Mass.....	Sept. 3, "
Car couplings.....	Nathan Haskins.....	Manchester, N. H.....	Oct. 29, "
Carriage bodies, hanging.....	M. G. Hubbard.....	Hume, N. Y.....	Feb. 12, "
Carriage bodies, hanging.....	M. G. Hubbard.....	Geneva, N. Y.....	Nov. 26, "
Carriage jacks.....	Thomas G. Clinton, G. H. & E. H. Knight...	Cincinnati, O.....	Mar. 5, "
Carriages.....	James Patterson.....	Franklinville, N. Y.....	April 16, "
Carriages.....	Miles S. Watkins.....	Sommerville, Tenn.....	June 25, "
Carriages.....	Edward and Charles Eve- rett, jr.....	Washington, D. C.....	Dec. 17, "
Carriages, apparatus for releasing horses from.....	Tapley B. Pyron.....	Salina, Tenn.....	Oct. 22, "
Carriages, dash board for.....	Lewis Lupton.....	Winchester, Va.....	Oct. 1, "
Carriages, detaching horses from.	John W. Harrison.....	Logansport, Ind.....	Aug. 27, "
Carriage tops, elevating and low- ering.....	John L. Allen.....	Syracuse, N. Y.....	Feb. 19, "
Carriage tops, raising and lowering	Solomon Goddard & Hen- ry Warfield.....	Truxton, N. Y.....	Feb. 19, "
Cars, apparatus for retaining on the rails.....	William Payne.....	New York, N. Y.....	Mar. 5, "
Car seat backs.....	Thomas E. Warren.....	Troy, N. Y.....	July 30, "
Cars for plank roads, wooden rail, &c.....	Gideon Morgan.....	Calhoun, Tenn.....	June 11, "
Cars, railroad.....	Geo. S. Hacker.....	Charleston, S. C.....	Mar. 5, "
Cars, ventilating railroad—see "class V, "Ventilating."			
Felloes, machine for cutting.....	Joseph and Levi Adams.....	Hadley, Mass.....	July 9, "
Friction rollers.....	Joseph M. Totten.....	Peoria Ill.....	
Hubs and axles, connecting and disconnecting.....	A. M. Billings and Tho- mas A. Ambrose.....	Claremont, N. H.....	June 25, "
Hubs, connecting with axles.....	Junius Foster.....	Bridgeport, Conn.....	Feb. 26, "
Hubs with axles, connecting.....	Eliphalet S. Scripture.....	Green Point, N. Y.....	July 30, "
Neck yokes, attaching to poles of carriages.....	James M. Brown.....	Bloomfield, O.....	June 18, "
Omnibuses, turning up the steps of.....	Stephen Burdett.....	New York, N. Y.....	Aug. 27, "
Packing for oil boxes of axles, &c. adjusting.....	Warner Groat.....	Troy, N. Y.....	June 11, "
Skins, connecting with axles....	Abel Combs.....	Farmington, O.....	May 14, "
Springs for cars, &c., manufacture of India rubber—see class IV. "India rubber, &c."			
Spring, vulcanized India rubber...	Fowler M. Ray.....	New York, N. Y.....	Oct. 18, "
Trucks, connection with car bodies	George Vanderhoof.....	Patterson, N. J.....	Feb. 12, "
Trucks, railroad.....	James Ingersoll.....	Grafton, O.....	Feb. 2, "
Wagon tops, apparatus for regu- lating the setting of bows in...	A. McKinney.....	Montgomery, N. Y.....	Aug. 13, "
Wheels, car.....	Geo. W. Eddy.....	Waterford, N. Y.....	Jan. 8, "
Wheels, car machines for making wrought iron.....	Nathan Starks.....	Albany, N. Y.....	Oct. 29, "
Wheels, cast iron car.....	Lyman Kinsley.....	Norfolk co., Mass.....	Mar. 12, "
Wheels, cast iron car.....	Lyman Kinsley.....	Norfolk co., Mass.....	Mar. 12, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Wheels, cast iron car.....	Asa Whitney.....	Philadelphia, Pa....	Mar. 19, "
Wheels, cast iron car.....	James Boon.....	Lancaster, Pa.....	Apr. 16, "
Wheels, cast iron car.....	Albert Fuller.....	Boston, Mass.....	Aug. 27, "
Wheels, cast iron car.....	Nathan Washburn.....	Worcester, Mass....	Oct. 8, "
Wheels, cast iron R. R. car.....	Benj. Severson.....	Schenectady, N. Y..	Sept. 17, "
Wheels, wrought iron car.....	Herrick Aiken.....	Franklin, N. H.....	Oct. 1, "
Wheels, wrought iron car, clamp to be used in the manufacture of	Herrick Aiken.....	Franklin, N. H.....	Apr. 2, "
Whiffletrees, connecting with car- riages.....	James Barnes.....	Franklin, N. Y.....	June 11, "

CLASS XI.—HYDRAULICS AND PNEUMATICS, *including Water-wheels, Windmills, and other implements operated on by air or water, or employed in raising and delivering fluids.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Balloons and their appendages*...	Hugh Bell.....	London, England...	Mar. 26, 1850
Engines operated by steam air and water.....	James Black.....	Philadelphia, Pa....	Jan. 8, "
Filtering and drinking tube, pocket	Abijah Fessender.....	Boston, Mass.....	April 2, "
Filtering cocks.....	Daniel Bartlett, Jr.....	Boston, Mass.....	Oct. 15, "
Filters.....	Chas. D. Birdseye, ass'or to Warring Latting....	New York, N. Y....	Mar. 26, "
Hose, India rubber.....	Horace H. Day & Rich'd McMullin.....	New York, N. Y.... G. Barrington, Mass.	Sept. 17, "
Hydraulic apparatus for producing blast.....	Ransom Cook.....	Sarat'a Springs, N. Y.	June 11, "
Hydraulic blowers.....	Jeremiah Darling.....	Cincinnati, O.....	Dec. 24, "
Hydraulic blowers for furnaces, &c.	Ransom Cook.....	Sarat'a Springs, N. Y.	Apr. 16, "
Hydrolator.....	Zaniel Swope.....	Lancaster, Pa.....	Feb. 26, "
Molasses gates.....	Erastus Stebbins.....	Chicopee, Mass....	Oct. 15, "
Pipe coupling.....	Chapman Warner.....	Louisville, Ky.....	Apr. 30, "
Pipe, lead, manufacture of.....	William P. Tatham.....	Philadelphia, Pa....	Sept. 3, "
Pipes and hose, couplings for....	A. H. Brown.....	Albany, N. Y.....	Apr. 30, "
Pumps, attachments to, for agit- ing the surface of the water in the well.....	Wm. D. Mayfield.....	Elkton, Ky.....	Dec. 24, "
Pumps for deep wells.....	Nehemiah Dodge.....	New York, N. Y....	Mar. 12, "
Pumps for ships, &c.....	Franklin Ransom.....	New York, N. Y....	Mar. 19, "
Pumps, rotary.....	William H. Davis.....	Maysville, Ky.....	Nov. 5, "
Regulators, feed for canal—see class IX., "Canals."			
Sprinkling streets, &c., apparatus for.....	Joseph D. Price.....	Smithsburgh, Md...	April 9, "
Valves of hydraulic engines, ar- rangement of the.....	William Kentish, ass'or to Cornelius Van Wag- oner.....	Paterson, N. J.....	Jan. 15, "
Waste gates.....	Hiram Yaw, and Thos. P. How.....	Boston, Mass..... Buffalo, N. Y.....	June 25, "
Water, apparatus for drawing....	Cain Broyles.....	Green Co., Tenn...	Apr. 30, "
Water casks, gauge for.....	John Merquart, Jr., ass'or to Henry Schreiner....	Reading, Pa.....	Mar. 12, "
Water metres.....	William Sewell, Jr.....	Williamsburg, N. Y.	Feb. 5, "
Water metres.....	Timothy Rose.....	Cortlandville, N. Y.	Sept. 24, "
Water wheels, directing water upon	Marcus B. Ashley.....	Watertown, N. Y...	July 30, "

\* In England, Nov. 23, 1848.



CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, *as applied to Pressing, Weighing, Raising and Moving Weights.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Hoisting machines.....	Sandy Harris.....	Philadelphia, Pa....	Mar. 19, 1850
Hoisting, machines for.....	William C. Allison.....	Philadelphia, Pa....	April 2, "
Lever jacks.....	James Leffel.....	Springfield, O.....	Dec. 10, "
Lewis, lever.....	Thos. Lidgerwood.....	Brooklyn, N. Y....	Mar. 12, "
Press boxes or vats for cheese....	Augustus N. Severance..	Cherry Valley, O....	April 30, "
Press, cotton.....	A. D. Brown.....	Clinton, Ga.....	Jan. 22, "
Presses, cheese.....	Augustus N. Severance..	Cherry Valley, O....	Mar. 26, "
Presses, cheese.....	Joseph Card.....	Fairport, O.....	Oct. 22, "
Presses, cheese, self-acting.....	John Underwood.....	Montpelier, Vt.....	June 25, "
Presses, cotton.....	J. T. Elliot.....	Carrolton, Miss....	Oct. 22, "
Presses for copying letters.....	George Burnham.....	Philadelphia, Pa....	Oct. 8, "
Presses, oil.....	Edwin Hills.....	Cincinnati, O.....	Mar. 12, "
Pressing cotton and other sub- stances into bales.....	S. A. Clements.....	Granby, Conn.....	Sept. 3, "
Scale beams.....	Samuel T. McDougal....	New York, N. Y....	Feb. 26, "
Scale beams.....	Wm. P. Pierce, ass'or to E. & T. Fairbanks & Co.....	St. Johnsbury, Vt..	April 9, "
Weighing frames.....	Chas. Downer.....	Philadelphia, Pa....	Mar. 19, "
Weighing grain, machines for....	Sam'l R. Wilmot.....	Lafayette, Ind.....	Dec. 24, "
Weighing machines.....	George Houston.....	Washington, N. C..	Aug. 13, "
Weighing machines, self, for grain, etc.....	W. W. W. H. T. Bram- ble.....	Lafayette, Ind.....	July 16, "
Windlass, jigger.....	Charles Perley.....	New York, N. Y....	July 30, "

CLASS XIII.—GRINDING MILLS, *and Mill-gearing, including Grain Mills, Mechanical Movements and Horse-Powers.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Attachments to mills for preparing corn in the cob for grinding....	John M. Seely and Wm. E. Tomlinson.....	Lockport, O.....	May 21, 1850
Bran dusters.....	Ezra R. Benton.....	Milwaukie, Wis....	May 7, "
Cider Mills.....	Sam'l Jackson.....	Hamilton, O.....	Jan. 15, "
Clutches, friction.....	Nelson Barlow.....	St. Louis, Mo.....	Aug. 13, "
Connecting rods of steam engines and other machinery.....	Levi Bissell.....	New York, N. Y....	May 14, "
Corn shellers.....	Sam'l Graves.....	Springfield, Ill.....	Sept. 17, "
Corn shellers.....	David Eldridge.....	Philadelphia, Pa....	Nov. 19, "
Corn shellers, concave of.....	Daniel Hoats.....	Milton, Pa.....	Jan. 22, "
Cutters, machinery for forming rotary—see class II.			
Feed apparatus for mills.....	John Sherlock and Wm. Brackbill.....	Portugal, Pa.....	June 18, "
Flour bolts.....	John M. Reed and Wm. E. Willis.....	Charlestown, Va....	Jan. 29, "
Flour, elevating, cooling and con- veying.....	Jesse White and Jon'a Bundy.....	Barnesville, O.....	Dec. 16, "
Flouring mills.....	Alexander F. Menefree..	Woodville, Va.....	Mar. 12, "
Gearing for regulating speed.....	Hosca Elliot.....	Manches, N. H....	Apr. 30, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Gearing for sugar cane mills.....	Edward Phelps.....	Pittsburgh, Pa.....	Jan. 29, 1850
Grinding and bolting machines combined.....	James M. Clark.....	Lancaster, Pa.....	Jan. 1, "
Grinding, steaming grain preparatory to.....	Benj. F. Broomell, ass'or to Israel Jackson.....	London Grove, Pa..	May 14, "
Gudgeons, wing.....	Mark Wilder.....	Princeton, Mass....	April 9, "
Horse powers.....	James L. Carthcart.....	Washington, D. C..	July 16, "
Mills for grinding.....	Chas. W. Brown.....	Boston, Mass.....	Jan. 15, "
Mills for grinding.....	Joseph W. Webb, ass'or to Benj. Gould.....	Auburn, N. Y.....	Jan. 29, "
Mills for grinding.....	J. R. Stafford.....	Cleveland, O.....	June 18, "
Mills for grinding.....	Willis P. Coleman.....	New Orleans, La....	Oct. 1, "
Mills for grinding.....	John Rogers, Jr.....	Jackson, Mich.....	Dec. 17, "
Mills for grinding.....	Joseph N. Walker.....	Cincinnati, O.....	Dec. 24, "
Mills for grinding and crushing..	William Frost.....	New York, N. Y...	
Motion, &c.—see "Reciprocating" &c.			
Oil cans.....	David G. Starkey.....	New York, N. Y....	April 9, "
Paint mills.....	Wm. W. Draper.....	Greenfield, Mass...	
Reciprocating motions, changing into a rotary motion.....	Peter Yates.....	Milwaukie, Wis....	Apr. 23, "
Reciprocating motion, changing rotary motion into.....	Isaac D. Garlick.....	Lyons, N. Y.....	Aug. 20, "
Registers for machinery, hydraulic*	Leman B. Pitcher.....	Syracuse, N. Y.....	April 9, "
Rubbing surfaces for regulating abrasion, form of†.....	Christian Schiele.....	Frankfort, Germany	May 21, "
Smut machines.....	Joseph G. Goshon.....	Sherleysburg, Pa...	Jan. 8, "
Smut machines.....	Léonard Smith.....	Troy, N. Y.....	Feb. 12, "
Smut machines.....	David Ulam.....	Mt. Pleasant, Pa....	Apr. 23, "
Smut machines.....	Cyrus D. Gordon and Samuel S. Goldthrite..	W Martinsburg, NY.	May 28, "
Smut machines, the rubbers of....	Franklin Wright.....	Lowville, N. Y.....	
Sugar, machines for pulverizing..	Oliver R. Chase, ass'or to Silas E. Chase and O. R. Chase.....	Indianapolis, Ind...	Apr. 30, "
		Boston, Mass.....	Oct. 15, "

\* Antedated Mar. 13, 1850.

† In England, Nov. 23, 1848.

CLASS XIV.—LUMBER, including Machines and Tools for Preparing and Manufacturing; such as Sawing, Planing, Mortising, Shingle and Stave, Carpenters and Coopers' Implements,

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Augers attaching to their handles..	John E. Larkin.....	Ballston Spa, N. Y..	Nov. 19, 1850
Augur handle.....	Augustus Thayer.....	Malden Bridge, N.Y.	Dec. 3, "
Barrel machinery.....	Solomon Andrews.....	Perth Amboy, N. J..	Feb. 12, "
Bench hooks.....	W. B. Kean.....	Worcester, Mass....	Aug. 13, "
Bits, expansible.....	Clinton L. Adancourt....	Troy, N. Y.....	Aug. 27, "
Boards, apparatus for jointing....	David Foster.....	Whitestown, N. Y..	May 28, "
Boring instruments, connecting cutters to shafts of.....	Lewis W. Miller.....	Mesopotamia, O....	Jan. 8, "
Boring machines.....	Andrew Weikart.....	Greenford, O.....	Jan. 15, "
Boring machines, augers for.....	George Flautt.....	Cave Town, Md....	Feb. 12, "
Branding tool.....	Lewis Stark.....	Chicopee, Mass....	Jan. 1, "
Chucks for boring and mortising machines.....	Eli K. Wisell.....	Warren, O.....	Jan. 22, "
Clothes pins, machines for slitting—see class XVII.			



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Dividers or compasses—see class XIV.			
Irregular forms, machines for dressing .....	Alanson Cary .....	Worcester, Mass....	Nov. 5, 1850
Irregular forms, machines for turning .....	Smith Beers .....	Naugatuck, Conn....	Dec. 3, "
Irregular forms, mills for sawing..	Oliver Wright .....	Rochester, N. Y....	Jan. 8, "
Lath cutting machines .....	Wm. Bullock, ass'or to Chas. Graff .....	Philadelphia, Pa....	July 9, "
Lathes, for turning .....	J. D. White .....	Hartford, Conn....	May 21, "
Mortises, machines for boring dove tailed .....	Henry T. Betjeman .....	Cincinnati, O .....	Dec. 3, "
Mortising machines .....	Smith Spencer .....	Angelica, N. Y....	Sept. 10, "
Pill boxes, machinery for making.	Asa Fessenden .....	Templeton, Mass....	Mar. 12, "
Pill boxes, machinery for making.	Nelson D. White .....	Winchendon, Mass..	Dec. 10, "
Planes for tonguing and grooving boards, &c. ....	James A. Woodbury .....	Boston, Mass .....	June 11, "
Planing machines .....	Nicholas G. Norcross .....	Lowell, Mass .....	Feb. 12, "
Planing machines .....	J. F. Ostrander .....	New York, N. Y....	Sept. 3, "
Planing machines .....	Dan'l H. Southworth .....	New York, N. Y....	Dec. 10, "
Planing machines, arrangement of pressure and feed rollers in .....	Chas. A. Spring and Peter Boon .....	Kensington, Pa....	July 30, "
Planing machines, cutters for .....	Enos G. Allen & Charles H. Briggs .....	Boston, Mass .....	Nov. 26, "
Planing machines, means for pre- venting back lash in the feed mo- tion of .....	Thos. H. Burr ridge .....	Jersey City, N. J....	Dec. 24, "
Planing ornamental mouldings, ma- chines for—see class XVIII., "Mouldings," &c.			
Planing slats for blinds, machinery for .....	Geo. Boornrill .....	Frederick, Del. ....	Mar. 5, "
Saw gate .....	Oliver B. Judd .....	Rockton, N. Y....	Oct. 1, "
Sawing with circular, saw mills for	Orlando Child .....	Granville, Ill .....	Dec. 17, "
Saw mills .....	Wartman Davis .....	Near Granville, Va..	April 2, "
Saw mills, apparatus for setting logs in .....	Thos. C. Theaker .....	Mansfield, O .....	May 21, "
Saw mills, circular .....	Nicholas G. Norcross .....	Lowell, Mass .....	Jan. 15, "
Saw mills, noddle irons for .....	Gideon Hotchkiss .....	Windsor, N. Y....	Mar. 12, "
Saws .....	Hazard Knowles .....	Washington, D. C..	Aug. 27, "
Saws, hanging in saw mills .....	E. H. & S. E. Parsons .....	Wilkesbarre, Pa....	Apr. 30, "
Scrapers used by cabinet makers..	Hiram Carver .....	Edinburgh, Va....	Aug. 6, "
Scribing lumber, machines for .....	John Shellenberger .....	Indianapolis, Ind ...	Sept. 10, "
Shingles, machines for cutting .....	Wm. Wood .....	Westport, Conn....	Jan. 8, "
Shingles, machinery for dressing..	Augustus Welch & Robt. Walker .....	Bennington, Ind....	Jan. 8, "
Slats, boards, &c., apparatus for jointing .....	Alanson Blanchard .....	W. Cambridge, Mass.	May 28, "
Splint machines .....	Horace Patterson .....	Baldwinsville, Mass.	May 14, "
Spokes, machines for dressing .....	Orville Mather .....	Cincinnati, O .....	Dec. 3, "
Staves, machinery for sawing .....	Edwin Jenney .....	New Bedford, Mass.	May 21, "
Staves, machinery for cutting .....	Chas. B. Hutchinson .....	Waterloo, N. Y....	Feb. 5, "
Staves, machines for dressing .....	Lewis S. Chicester .....	Troy, N. Y....	Sept. 3, "
Tenon bits .....	Eli K. Wisell .....	Warren, O .....	Aug. 6, "
Tenoning machines .....	E. M. Shaw .....	Baltimore, Md .....	Aug. 6, "
Tonguing and grooving, machinery for .....	Robert Kittle .....	Dansville, N. Y....	Jan. 15, "
Tools for preparing hubs for boxes	Sam'l Fahrney, ass'or to A. & J. Fahrney .....	Near Boonsboro, Md.	Mar. 19, "
Umbrella sticks, &c., machines for turning .....	Solomon West and Hiram Plumb .....	Honesdale, Pa....	Feb. 12, "
Veneers, &c., machines for cutting	Conrad Poppenhusen .....	New York, N. Y....	July 16, "
Wooden bowls, machinery for turning out .....	Addison Everett .....	Middlefield, Mass ..	July 30, "
Wood, machines for sawing .....	Spencer Lewis .....	Tiffin, Ohio .....	May 21, "



CLASS XV.—STONE AND CLAY MANUFACTURES, *including Machines for Pottery, Glass making, Brick making, Dressing and Preparing Stone, Cements, and other Building Materials.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Brick machines, preparing clay for	Charles M. Ferris and Nathan Swan .....	New Milford, Conn. Patterson, N. Y. ....	April 16, 1856
Brick presses.....	Charles Carnell .....	Kensington, Pa. ....	Jan. 15, "
Brick presses.....	John Butler .....	Buffalo, N. Y. ....	Jan. 29, "
Brick presses.....	Collins B. Baker .....	Troy, N. Y. ....	Mar. 26, "
Brick presses.....	Nathan Sawyer .....	Baltimore, Md. ....	Apr. 23, "
Brick presses.....	Shepherd Whitman .....	New Albany, Ind. ....	Apr. 23, "
Brick presses.....	John W. Hope .....	New York, N. Y. ....	June 4, "
Brick presses.....	Thomas Culbertson and Geo. Scott .....	Philadelphia, Pa. ....	June 25, "
Kilns, lime.....	Wm. McCoy .....	Farnettsburg, Pa. ....	Nov. 5, "
Marble, machines for sawing.....	A. H. Tingley, ass'or to E. W. H. F. and A. H. Tingley.....	Providence, R. I. ....	Mar. 19, "
Slates, machines for holding and dressing .....	Samuel E. Crocker.....	Boston, Mass. ....	Apr. 30, "
Stone, machines for dressing .....	Robert Eastman .....	Concord, N. H. ....	June 18, "
Stone, machines for polishing .....	Amos Walter.....	Middletown, Ind. ....	May 17, "
Stone, rubbing and polishing.....	Adrian Olcott .....	Millstone, N. J. ....	July 30, "

CLASS XVI.—LEATHER, *including Tanning and Dressing, Manufacture of Boots, Shoes, Saddlery and Harness.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Boot trees.....	Wm. Upfield .....	Lancaster, Pa. ....	June 25, 1856
Buckles .....	Geo. R. Kelsey.....	Middletown, Conn. ....	Jan. 15, "
Buckles for harness.....	Solon Bingham, jr.....	Poestenkill, N. Y. ....	Dec. 10, "
Buckles, harness .....	Jacob S. Embich.....	Green village, Pa. ....	May 21, "
Buckles, machinery for making four-sided.....	Alvin & Oliver B. North, and Stephen Frink .....	New Britain, Conn. ....	May 28, "
Harness, &c., rings for.....	Andrew Dietz .....	New York, N. Y. ....	Apr. 9, "
Harness, breast plate for.....	Orrin Ramsdell, ass'or to Joseph B. Sawyer and Sylvanus Sawyer .....	Westfield, Vt. .... Mouson, Mass. ....	Feb. 19, "
Harness, hames .....	Andrew Dietz .....	Templeton, Mass. ....	Apr. 2, "
Harness, hames .....	John Low .....	New York, N. Y. ....	Apr. 9, "
Harness, hames, fastenings for...	Timothy Taylor, ass'or to Mortimer Taylor...	Purcell's store, Va. ....	Jan. 15, "
Hide handling cylinders, beaters in	James R. Janis .....	Govanstown, Md. ....	Mar. 19, "
Hides, machines for breaking .....	Charles Buchanan .....	Easton, Pa. ....	Apr. 16, "
Leather, apparatus for splitting and stretching.....	Bradford Rowe .....	North Whitehall, Pa. ....	Apr. 30, "
Leather, machine for cutting in hollow-ware forms.....	Francis Durant and Onesiphore Pecqueur, ass'r to Richard E. Rabeau.	Albany, N. Y. ....	Apr. 30, "
Morocco, machines for finishing..	Edward Bookhout and Henry Cochen, jr.....	Paris, France .....	June 18, "
Pegging jacks .....	Jacob Jenkins .....	Philadelphia, Pa. ....	June 11, "
Saddles, harness.....	Robert Spencer .....	Williamsburg, N. Y. ....	Oct. 15, "
Saddles, spring .....	Geo. Fisher.....	Andover, Mass. ....	Aug. 6, "
Shoes, over.....	Peter Dorn .....	Brooklyn, N. Y. ....	July 16, "
Stirrups, safety.....	Nathan Post .....	Raleigh, N. C. ....	May 7, "
Tanning apparatus.....	Wm. H. Rosensteel .....	Philadelphia, Pa. ....	June 18, "
Terrets, fastening in saddle harness	Peter B. Cool.....	East Cleveland, O. ....	Feb. 12, "
Vats for tanning hides.....	Lewis C. England .....	New Oxford, Pa. ....	Mar. 12, "
		Columbus, O. ....	Dec. 24, "
		Williamsburgh, N. Y. ....	



CLASS XVII.—HOUSEHOLD FURNITURE, *Machines and Implements for Domestic Purposes,*  
including *Washing Machines, Bread and Cracker Machines, Feather Dressing, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Annunciator, or bell telegraph....	John Garvey .....	New York, N. Y....	Nov. 19, 1850
Bedstead fastenings .....	Matthew Elder .....	Mansfield, O. ....	Jan. 22, "
Bedstead fastenings .....	Robert Ramsey .....	Wilmington, Pa....	Feb. 19, "
Bedstead fastenings .....	Cha's C. Coolidge, asso'r to Francis Harrington and C. C. Coolidge....	Boston, Mass.....	May 7, "
Bedstead fastenings .....	Charles H. Parker .....	New Geneva, Pa....	June 11, "
Bedstead fastenings .....	John Morrison .....	McArthurstown, O.	Oct. 29, "
Bedsteads .....	Wilhelm Zaizer .....	Cincinnati, O.....	Nov. 19, "
Bedsteads and sacking bottoms, portable .....	Samuel Whitmarsh .....	Northampton, Mass.	Oct. 8, "
Bedsteads, camp .....	Wm. C. Shaw .....	Philadelphia, Pa....	
	James Stalcup .....	Wilmington, Del...	Sept. 10, "
Bedsteads, folding .....	John Binder .....	Chelsea, Mass.....	Jan. 15, "
Bedsteads, invalid .....	Alexander W. Bartrer...	Saffolk co., Mass...	Mar. 5, "
Bedsteads, machinery for cutting screws on the rails of .....	Spencer Lewis .....	Tiffon, O.....	Apr. 9, "
Bedclothes clasps .....	Francis A. Rockwell ....	Ridgefield, Conn....	Feb. 12, "
Beef, dried, apparatus for cutting.	Daniel W. Goble, ass'or to G. S. Ward and G. F. Musselman .....	Newark, N. J.....	July 9, "
Beefsteaks, preparing for cooking.	Thomas G. Stagg .....	New York, N. Y....	Oct. 22, "
Bread, portable soup, preparation of .....	Gail Borden, jr .....	Elizabethport, N. J.	July 30, "
Bureau drawers, fastenings for ...	Geo. Wode .....	Galveston, Texas...	Feb. 5, "
Castors for furniture .....	Solomon B. Ullman .....	New York, N. Y....	Feb. 12, "
Chairs, exercising—see class XX, "Exercising chairs."			
Chairs, nursery .....	Samuel S. May .....	Sterling, Mass. ....	June 4, "
Clothes frames .....	Humphrey Kempton ....	Fairhaven, Mass. ...	Feb. 26, "
Clothes pins, machine for slitting.	Oratia P. Allen .....	Rindge, N. H.....	May 14, "
Coffee, apparatus for making.....	Nathaniel Waterman....	Suffolk co. Mass. ...	Feb. 19, "
Coffee roasting .....	W. H. Trissler and Elias Brecht .....	Fairhaven, Mass. ...	Feb. 26, "
Comfits, kettle for manufacturing.	Wm. Holt .....	Hartford, Conn.....	Oct. 8, "
Crackers, machines for cutting ...	Wm. R. Nevins .....	New York, N. Y....	Aug. 20, "
Cream, process of preparing—see class I.			
Curtains, window, adjustable roll- ers for .....	Edward S. Clark .....	Suffolk co., Mass...	Feb. 19, "
Dough, method of kneading .....	Henry N. Rider .....	Adams, Mass.....	Feb. 19, "
Fly brushes .....	Samuel R. Wilcott .....	Lafayette, Ind.....	Nov. 5, "
Fulling mills—see class III.			
Knives, spiral, machines for grind- ing—see class II.			
Mattresses, spring .....	John V. McElwee .....	Philadelphia, Pa....	April 2, "
Mattresses, spring .....	Wm. F. Ressegine .....	Cincinnati, O.....	June 11, "
Meat cutting apparatus .....	John G. Perry .....	South Kingston, R.I.	Feb. 26, "
Meat, process for curing—see class IV.			
Quilting frames .....	Wm. T. Barnes .....	Buffalo, N. Y.....	May 28, "
Quilting frames .....	Charles H. Cook .....	Coeyman's hollow, N. Y.....	July 9, "
Refrigerators .....	Ephraim Larrabee .....	Baltimore, Md. ....	Feb. 26, "
Rule and socket joint .....	Charles Chinnock .....	New York, N. Y....	Feb. 12, "
Sad irons, furnaces for heating— see class V. "Furnaces."			
Sausage stuffers .....	Simon McNair .....	Hatborough, Pa....	Nov. 26, "
Sofa bedsteads .....	Edwin B. Bowditch ....	New Haven, Conn..	Feb. 26, "
Sofa bedsteads .....	A. G. Warren .....	Norwich, Conn.....	May 21, "
Sofa bedsteads .....	Russell Scarrett .....	St. Louis, Mo.....	Oct. 8, "
Stands, the construction of bases for .....	Ezra Ripley .....	Troy, N. Y.....	Apr. 16, "



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Table furniture, machines for washing .....	Joel Houghton .....	Ogden, N. Y. ....	May 14, 1850
Tables, self-waiting .....	Josiah Lamb .....	New London, Ind..	Jan. 29, "
Tables, extension.....	Edwin F. Shoenberger...	Pittsburg, Pa. ....	Nov. 19, "
Washing machines .....	Ransom Mareau.....	Lawrenceville, Pa..	Jan. 1, "
Washing machines .....	Joel Haines .....	West Middleburg, O	Feb. 5, "
Washing machines .....	Richard A. Fisher .....	Sunbury, Pa. ....	Nov. 5, "
Wash mixtures* .....	Stephen Crane.....	Charleston, S. C....	Jan. 29, "

\* Antedated, Jan. 19, 1850.

**CLASS XVIII.—ARTS, POLITE, FINE, AND ORNAMENTAL, including Music, Painting, Sculpture, Engraving, Books, Printing, Binding, Jewelry, &c.**

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Burning ornamental figures upon wood.....	Hamilton Wood.....	New York, N. Y....	Feb. 19, 1850
Copying presses, damping paper for .....	Geo. Burnham .....	Philadelphia, Pa....	Dec. 24, "
Daguerreotype pictures, cases for.	Ann F. Stiles .....	Southbury, Conn...	Jan. 22, "
Daguerreotype plate holders .....	Geo. Mallory .....	New York, N. Y....	Sep. 17, "
Daguerreotype plates, holding....	Samuel Peck .....	New Haven, Conn..	April 30, "
Electrotyping.....	Geo. Mathiot .....	Washington, D. C..	Dec. 10, "
Figures, cutting in relief on wood	John T. Bruen .....	New York, N. Y....	Mar. 12, "
Files for keeping papers .....	Edwin D. Dodd .....	Cincinnati, O.....	Jan. 15, "
Guitar heads and caps d'astra ....	James Ashborn.....	Walcottville, Conn..	April 16, "
Lozenges, machines for cutting...	John W. Pepper.....	Salem, Mass. ....	July 2, "
Melodeon.....	Amos L. Swan.....	Cherry valley, N. Y.	May 7, "
Mouldings, machines for planing ornamental.....	John B. H. Chatain.....	New York, N. Y....	Mar. 19, "
Musical instruments, reed .....	Charles Austen.....	Concord, N. H.....	April 30, "
Musical instruments, reed .....	James P. Sleeper .....	Worcester, Mass....	Oct. 29, "
Musical scales, mode of representing.....	W. B. Billings .....	Eastport, Me.....	Sep. 10, "
Ornamenting textile fabrics* .....	Robert Milligan.....	Harden, Eng.....	Aug. 13, "
Paper filers.....	William A. Collard .....	Cincinnati, O.....	Sept. 17, "
Paper, machines for folding.....	Geo. R. Snow.....	Boston, Mass.....	Oct. 15, "
Pen and pencil cases.....	Albert G. Bagley .....	New York, N. Y....	Jan. 1, "
Pens, fountain.....	Charles W. Krebs.....	Baltimore, Md. ....	Nov. 26, "
Pens, fountain.....	Ellsworth H. Hyde and Rollin L. Dawson.....	Haydenville, Mass..	Nov. 26, "
Pentagraphs .....	Allen Judd.....	Chicopee.....	Aug. 13, "
Photographic pictures, coloring...	Aaron O. Dayton.....	Washington, D. C..	Mar. 12, "
Photographic pictures, producing upon transparent media.....	William B. Jones .....	Boston, Mass.....	June 25, "
Photographic pictures on glass, &c	Frederick Langenheim...	Philadelphia, Pa....	Nov. 19, "
Piano forte action.....	John Buck .....	New York, N. Y....	April 16, "
Piano fortes.....	James Polsson .....	New York, N. Y....	Aug. 13, "
Piano fortes.....	John Buck .....	New York, N. Y....	April 23, "
Piano fortes, upright.....	Lemuel Gilbert .....	Boston, Mass.....	June 18, "
Pianos, sounding boards for.....	Conrad Meyer.....	Philadelphia, Pa....	July 9, "
Portfolios .....	James Shaw.....	Providence, R. I....	Dec. 24, "
Printing.....	Bartholomew Beniowski, (Polish refugee) .....	London, Eng.....	Oct. 29, "
Printing calico, mode of cleansing and drying gum elastic bands in	James Hunter, ass'or to Jeremiah Knight.....	Blockley, Pa.....	Aug. 27, "

\* In England, March 8, 1850.

† In England, Nov. 17, 1846.



INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Printing floor oil cloths*.....	Nathaniel B. Powers.....	Lansingburg, N. Y.	Mar. 26, 1850
Printing floor oil cloth.....	Leverett Moore.....	Balston, Spa, N. Y.	Mar. 26, "
Printing machines.....	Oliver T. Eddy.....	Baltimore, Md.....	Nov. 12, "
Printing presses.....	Charles W. Hawkes.....	Boston, Mass.....	Dec. 24, "
Printing presses.....	Geo. P. Gordon.....	New York, N. Y....	Mar. 26, "
Printing presses.....	Frederick J. Austin.....	New York, N. Y....	May 7, "
Printing presses.....	Charles W. Hawkes.....	Boston, Mass.....	June 4, "
Printing presses and paper machines, apparatus for receiving and transferring to the pile sheets of paper from.....	Isaac Adams.....	Boston, Mass.....	Mar. 26, "
Printing presses, copper and steel plate.....	Elijah C. Middleton, Ed. Nevers, & Rob't Neale	Cincinnati, O.....	Nov. 19, "
Printing presses, cylinder†.....	Bartholomew Beniowski,	Mount Carmell, O....	Aug. 13, "
Rule and socket joint—see class XVII.		London, Eng.....	
Seraphines.....	Rufus H. Green.....	Poultney, Vt.....	Feb. 19, "
Stereotype plates, casting.....	Jason M. Mahan.....	Philadelphia, Pa....	Sept. 24, "
Studs for shirt bosoms.....	James P. Heiss.....	Philadelphia, Pa....	Feb. 12, "
Type cases, printers'.....	John Bell.....	Harlem, N. Y.....	Jan. 8, "
Types, metallic, engraved plate &c., preparing the face of.....	Luke Vander Veer Newton.....	New York, N. Y....	Aug. 20, "
Writing and drawing, clamps for holding paper in.....	Eliakim B. Forbush.....	Buffalo, N. Y.....	Sept. 3, "

\* Antedated Sept. 23, 1849.

† In England, Oct. 14, 1847.

**CLASS XIX.—FIRE-ARMS and Implements of War, and parts thereof, including the Manufacture of Shot and Gunpowder.**

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Barrels for fire arms, method of making.....	Jesse Pannabecker.....	Elizabeth towns'p Pa	Aug. 6, 1850
Breech pin, piston, devices for moving and holding.....	Wm. W. Marston.....	New York, N. Y....	June 18, "
Cartridges, winged metallic.....	Alonzo D. Perry.....	New York, N. Y....	Mar. 5, "
Caps, percussion, machine for forming and charging.....	Geo. Wright.....	Washington, D. C..	Sept. 24, "
Chargers attached to fire arms.....	Orville B. Percival, and Asa Smith.....	East Haddam, Conn	July 9, "
Fire arms, repeating.....	Samuel Colt.....	Hartford, Conn.....	Sept. 3, "
Fire arms, revolving hammer.....	Geo. Leonard, jr.....	Shrewsbury, Mass..	July 9, "
Gun, percussion, method of preventing accidental discharge in the.....	John Wärfle.....	Philadelphia, Pa....	April 30, "
Lock for fire arms.....	Nathan B. Cook.....	Chicago, Ill. ....	Aug. 27, "
Lock for fire arms, toothed segment.....	Dexter H. Chamberlain..	Boston, Mass.....	May 14, "
Locking, apparatus, the repeating fire arms.....	Joshua Stevens.....	Chicopee, Mass....	Nov. 26, "
Revolving breech fire arms.....	Hans Iverson.....	New York, N. Y....	Mar. 26, "
Revolving chambered fire arms...	Samuel Colt.....	Hartford, Conn.....	Sept. 10, "
Revolving fire arms, method of attaching cylinder in.....	Dexter H. Chamberlain, ass'nor to Thomas J. Whittemore.....	Boston, Mass.....	April 23, "
Rifles, machinery for giving increased twist in cutting.....	Edwin Williams and Jas. Culbertson.....	Kenton co., Ky....	Mar. 12, "



CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, *including Trusses, Dental Instruments, Bathing Apparatus, &c.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Chairs and supporters, obstetric ..	Asa Blood .....	Jarnesville, Wis....	Aug. 27, 1850
Dental and surgical chairs .....	Flavius Searle .....	Springfield, Mass...	Mar. 25, "
Dentists' chairs .....	Abraham M. Asay .....	Philadelphia, Pa....	April 23, "
Exercising chairs .....	Solomon Chapin .....	Ashland, O.....	Mar. 26, "
Horses, flying .....	Eliphalet S. Scripture....	Greensport, N. Y...	June 4, "
Leeches, mechanical .....	Marcellin Deliuc .....	New York, N. Y...	May 7, "
Legs, artificial .....	George W. Yerger .....	Philadelphia, Pa....	Mar. 19, "
Legs, artificial .....	W. C. Stone .....	Boston, Mass.....	Dec. 17, "
Paring horses' hoofs, instruments for—see class XXII., "Horses" hoofs, &c."			
Pessaries .....	Jonathan M. Robinson..	Charlestown, Mass.	Nov. 19, "
Plasters, gauges for spreading ....	James M. Keep .....	Bath, Me.....	April 30, "
Respiring apparatus .....	Benj. J. Lane .....	Cambridge, Mass...	July 2, "
Splints for fractures .....	Adam Hays .....	Madison, Ind.....	Aug. 13, "
Splints for surgeons .....	Benj. Welch .....	Larksville, Conn....	Sept. 3, "
Supporters, abdominal .....	Samuel S. Fitch .....	New York, N. Y...	Mar. 19, "
Supporters, obstetrical .....	Wm. W. Finch, Jacob Blaisdell and Leander Babbit .....	Essex co., N. Y....	June 15, "
Supporters, obstetrical .....	Mary W. O'Meara .....	New York, N. Y...	Mar. 12, "
Supporters, obstetrical .....	F. H. Chase .....	Clintonville, N. Y...	Aug. 20, "
Supporters, utero vaginal .....	Russel Caulkens .....	Sandusky city, O...	June 29, "
Teeth, setting artificial by atmos- pheric pressure .....	John A. Cleveland .....	Charleston, S. C....	June 25, "
Truss pads .....	Frederick M. Butler .....	New York, N. Y...	July 23, "
Trusses for hernia .....	Wm. R. Battle .....	Powelton, Ga.....	Jan. 22, "
Vaccinating, instruments for .....	Junius F. Tezer .....	Rochester, N. Y....	Aug. 13, "
Vaccinating, instruments for .....	Henry Mellish .....	Walpole, N. H.....	Dec. 24, "

CLASS XXI.—WEARING APPAREL, *Articles for the Toilet, &c., including Instruments for Manufacturing.*

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Buckles, suspender .....	Wm. Scarlett .....	Newark, N. J.....	May 14, 1850
Buckles, suspender .....	Chas. Benedict, ass'or to Hotchkiss & Merriman, Manufacturing Co....	Waterbury, Conn ..	Oct. 22, "
Buckles, suspender .....	Elisha Steele .....	Waterbury, Conn ..	Dec. 3, "
Buttons, process of varnishing ....	Elisha M. Pomeroy .....	Wallingford, Conn..	Feb. 19, "
Cap fronts, machines for cutting..	Geo. Burgess .....	New York, N. Y...	Feb. 26, "
Hat bodies, machines for making.	Edw'd F. Condit, and Al- fred Taylor, ass'or to W. Eaglesford .....	Springfield, N. J....	Mar. 19, "
Hats, machinery for pressing .....	Bennett Potter, Jr. ....	Templeton, Mass...	Oct. 29, "
Hooks and eyes, attaching to pa- per cards .....	Peter Kirkham .....	Waterbury, Conn ..	July 30, "
Hooks and eyes, fastening upon cards, mode of .....	Ezra J. Warner .....	Waterbury, Conn ..	Nov. 5, "
Shirt studs and buttons .....	Benton P. Coston .....	Philadelphia, Pa....	Aug. 27, "
Stays, ladies' .....	Louisa Baylis .....	Orriskarry, N. Y...	Sep. 10, "
Tailors' measures .....	Amos Stocker .....	Ogdensburg, N. Y...	May 28, "
Tailors' measures .....	William W. Allen .....	Bordentown, N. J...	Sep. 16, "



## CLASS XXII.—MISCELLANEOUS.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Ayes and noes, application of electro-chemical printing in colors to taking.....	Albert N. Henderson....	Buffalo, N. Y.....	July 22, 1850
Ballot boxes.....	Joseph A. Hill, ass'or to John R. Cannon and Abner Hobbs.....	Bloomington, Ind.... Heltonsville, Ind.... Greensbury, Ind....	Aug. 6, "
Branding tools—see class XIV.			
Emery wheels clamps for grinding	Henry S. Vrooman.....	Springfield, Mass.,...	Nov. 5, "
Fire, apparatus for extinguishing—see class V.			
Grapple, spring.....	Orra Warner and Chas. S. Gaylord.....	Gaylord's Bridge, Ct.	Oct. 5, "
Harpoon, gun.....	Robt. Brown.....	New London, Conn.	Aug. 20, "
Harpoon, gun.....	William Albertson.....	New London, Conn.	Nov. 19, "
Harpoon and lances, gun.....	Robt. Brown.....	New London, Conn.	Aug. 20, "
Harpoons, method of attaching lines to .....	Chas. F. Brown.....	Warren, R. I.....	Sep. 3, "
Horses, apparatus for breaking...	Seymour Tomlinson.....	Washingt'n Hollow, N. Y.....	Sep. 3, "
Horses' hoofs, instruments for paring.....	Ashley Crafts and Ebenezer Weeks.....	Auburn, O.....	Jan. 1, "
Ice, scraper for removing snow from.....	Nathaniel J. Wyeth.....	Cambridge, Mass....	Mar. 5, "
Locking portable safes to the floor.	Henry Hotchstrasser....	Philadelphia, Pa....	Feb. 19, "
Privies, apparatus for emptying...	Florimond Datchiy.....	New York., N. Y..	Dec. 17, "
Stanchions for cattle.....	Geo. W. Hatch.....	Parkman, O.....	July 30, "
Store counters.....	Evan O. Thomas.....	Philadelphia, Pa....	July 9, "
Tobacco, method of dressing cut..	Gideon Wales.....	Liberty, N. Y.....	Mar. 26, "
Tobacco stems, curing.....	Thos. Hoyt.....	New York, N. Y....	Jan. 8, "
Trap for catching flies.....	Joel B. Fuller and Geo. W. Pierce.....	Worcester, Mass....	April 16, "
Traps, arrangement of mirrors in..	James Stevens.....	Middletown, Md....	June 11, "
Washers, etc., bevelling the surface of.....	William Field.....	Providence, R. I....	Sep. 3, "
Whip lashes.....	David N. and Edward B. Day.....	Westfield, Mass....	Feb. 5, "
Whips, raw hide, machines for polishing.....	Chas. Baeder.....	New York, N. Y....	May 21, "
Whips, raw hide, manufacture of.	Thos. J. Barneo.....	Lowell, Mass.....	Aug. 16, "



PATENTS RE-ISSUED DURING THE YEAR 1850.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.	RE-ISSUED.
Ball, loaded.....	Walter Hunt, ass'or to Geo. A. Arrowsmith.....	New York, N. Y.....	Aug. 10, 1848	Feb. 26, 1850
Brick presses.....	Isaac Gregg.....	Philadelphia, Pa.....	June 6, 1848	Sept. 17, "
Bridges and other structures, constructing, the truss frames of.....	William Howl.....	Springfield, Mass.....	Aug. 3, 1840	Sept. 3, "
Carding and spinning machines.....	Moses Chase, of whose patent George Law, deceased, is assignee, of whom R. S. S. Stewart is executor.....	Baltimore, Md.....	Mar. 23, 1842	Jan. 1, "
Cartridge, method of attaching.....	Walter Hunt, ass'or to W. R. Palmer.....	New York, N. Y.....	Aug. 10, 1848	Feb. 26, "
Carriages, railroad, manner of constructing so as to ease the lateral motion of the bodies thereof.....	Chas. Davenport and Alkert Bridges.....	Cambridgeport, Mass.....	May 4, 1841	Dec. 3, "
Churns.....	Z. C. Robbins.....	St. Louis, Mo.....	June 1, 1849	Jan. 1, "
Carry combs.....	William Beach.....	Philadelphia, Pa.....	Mar. 13, 1849	Feb. 12, "
Distilling apparatus.....	Chas. A. Krechler.....	Stockholm, Sweden.....	July 10, 1849	Feb. 26, "
Door knobs, shanks for.....	L. R. Livingston, J. J. Roggen and C. Adams..	Pittsburg, Pa.....	July 7, 1846	Oct. 1, "
Fire arms, concealed trigger for.....	Jacob Pecare and Josiah M. Smith.....	New York, N. Y.....	Dec. 4, 1849	Aug. 13, "
Furnaces, portable.....	Merritt F. Potter.....	Charlemont, Mass.....	Jan. 22, 1850	Oct. 22, "
Harvesters of clover heads and other grain.....	John Hinton.....	Packs Ferry, Va.....	May 22, 1849	Aug. 13, "
Irregular forms, machinery for turning.....	Timothy Clark.....	New Haven, Conn.....	Jan. 19, 1847	Nov. 12, "
Leard and tallow, machines for rendering.....	Ebenezer Wilson.....	Cincinnati, O.....	Oct. 9, 1844	May 7, "
Leather, cutting and stretching.....	Bradford Rowe.....	Albany, N. Y.....	Apr. 30, 1850	Oct. 15, "
Mills for grinding.....	Sidney A. Bantz and Wm. Andrews.....	Frederick, Md.....	Dec. 4, 1849	Oct. 15, "
Paper, machines for boiling and washing rags for manufacturing.....	Geo. Spafford, ass'or to John Campbell.....	New York, N. Y.....	Sept. 2, 1840	June 11, "
Planing machines.....	Calvin Enmons, Wm. Enmons administrator of	New York, N. Y.....	June 27, 1848	May 21, "
Printing presses.....	Stephen P. Ruggles.....	Boston, Mass.....	Nov. 10, 1840	Sept. 17, "
Pumps.....	Birdsill Holly.....	Seneca Falls, N. Y.....	June 5, 1849	May 7, "
Screw machines, feeders for.....	Solyman Merrick.....	Springfield, Mass.....	Mar. 7, 1846	May 7, "
Screws, wood, machine for cutting the threads of.....	Cullen Whipple, ass'or to A. Hodges, agent of the New England Screw Company.....	Providence, R. I.....	Aug. 18, 1842	Mar. 5, "
Stoves, coal.....	Anson Atwood.....	Troy, N. Y.....	May 14, 1850	Sept. 7, "
Stoves, cooking.....	James Root.....	Cincinnati, O.....	July 18, 1848	Jan. 22, "
Stoves, cooking.....	Jordan L. Mott.....	New York, N. Y.....	Aug. 22, 1848	April 30, "
Stoves, cooking.....	Darius Buck, deceased, Desire Buck, administrator of.....	Albany, N. Y.....	May 20, 1839	Aug. 30, "



CLASSIFIED LIST OF PATENTS—CONTINUED

DESIGNS.

DESIGNS.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Bas relief of Henry Clay.....	C. Y. Haynes.....	Philadelphia, Pa.....	Nov. 12, 1850
Blower stand.....	Walter Bryant.....	Boston, Mass.....	Sep. 24, "
Bracket, cast iron.....	Walter Bryant.....	Boston, Mass.....	Aug. 13, "
Bust of Daniel Webster.....	John C. King.....	Boston, Mass.....	Sept. 17, "
Carriage plates.....	John S. Royce.....	Cuylersville, N. Y.....	Nov. 19, "
Chandeliers.....	E. S. Archer and R. F. Warner.....	Philadelphia, Pa.....	Mar. 19, "
Floor cloth, painted.....	James Hutchinson, assignor to D. A. E. and N. B. Powers.....	Lansingburg, N. Y.....	May 14, "
Furnace, portable.....	C. W. Warnick, F. Leibrant, J. G. Abbott and A. Lawrence.....	Philadelphia, Pa.....	Mar. 26, "
Grate frame and fender.....	James L. Jackson.....	New York, N. Y.....	Oct. 15, "
Grate, portable.....	Amos Paul.....	New Market, N. H.....	July 22, "
Lamps.....	E. S. Archer and R. F. Warner.....	Philadelphia, Pa.....	July 9, "
Railings, iron.....	William Ballard.....	New York, N. Y.....	Oct. 29, "
Register and ventilator, plates for.....	Charles T. Tuttle and James S. Bailey.....	Williamsburg, N. Y.....	Sep. 24, "
Register and ventilator, plates for.....	Charles T. Tuttle and James S. Bailey.....	Williamsburg, N. Y.....	Sep. 24, "
Register and ventilator, plates for.....	Charles T. Tuttle and James S. Bailey.....	Williamsburg, N. Y.....	Sep. 24, "
Register and ventilator, plates for.....	Charles T. Tuttle and James S. Bailey.....	Williamsburg, N. Y.....	Sep. 24, "
Register and ventilator, plates for.....	Charles T. Tuttle and James S. Bailey.....	Williamsburg, N. Y.....	Sep. 24, "
Register and ventilator, plates for.....	Charles T. Tuttle and James S. Bailey.....	Williamsburg, N. Y.....	Sep. 24, "
Spoon handles.....	Charles P. and George B. Gordon.....	Boston, Mass.....	Nov. 19, "
Stoves.....	Henry L. Sheperd.....	Dayton, Ohio.....	Jan. 8, "
Stoves.....	Peter J. Simmons.....	Troy, N. Y.....	Feo. 5, "
Stoves.....	J. G. Lamb and C. Harris, assignors to William C. Davis.....	Cincinnati, Ohio.....	Feb. 5, "
Stoves.....	William P. Cresson, David Stuart and Peter Seibert, assignors to William P. Cresson.....	Philadelphia, Pa.....	Feb. 5, "
Stoves.....	William P. Cresson, David Stuart and Peter Seibert, assignors to William P. Cresson.....	Philadelphia, Pa.....	Feb. 5, "
Stoves.....	Samuel D. Vose*.....	Albany, N. Y.....	Feb. 12, "
Stoves.....	Samuel D. Vose†.....	Albany, N. Y.....	Feb. 12, "
Stoves.....	Samuel D. Vose†.....	Albany, N. Y.....	Feb. 12, "

† Antedated Nov. 17, 1849.

† Antedated Nov. 17, 1849.

\* Antedated Nov. 17 1849.



## CLASSIFIED LIST OF PATENTS CONTINUED.—DESIGNS.

DESIGNS.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
Stoves.....	James H. Conklin, assignor to.....	Peekskill, N. Y.....	Feb. 19, 1850
Stoves.....	S. B. Sexton & Co.....	Baltimore, Md.....	Feb. 19, "
Stoves*.....	Jeremiah Green and George Warren.....	Troy, N. Y.....	Feb. 26, "
Stoves.....	Lathorp S. Bacon.....	Rochester, N. Y.....	Feb. 26, "
Stoves.....	William L. Sanderson, assignor to.....	Troy, N. Y.....	Feb. 26, "
Stoves.....	Clute & Brothers.....	Schenectady, N. Y.....	Feb. 26, "
Stoves.....	W. P. Cresson, David Stuart and P. Seibert, assignors to.....	Philadelphia, Pa.....	Mar. 12, "
Stoves.....	Wm. P. Cresson.....	Philadelphia, Pa.....	Mar. 12, "
Stoves.....	W. P. Cresson, David Stuart and P. Seibert, assignors to.....	Philadelphia, Pa.....	Mar. 12, "
Stoves.....	William P. Seibert.....	Philadelphia, Pa.....	Mar. 12, "
Stoves.....	James H. Conklin.....	New York, N. Y.....	Mar. 12, "
Stoves.....	Samuel A. House.....	Mechanicsville, N. Y.....	Mar. 26, "
Stoves.....	James Wager.....	Troy, N. Y.....	April 2, "
Stoves.....	Joshua Crandall, assignor to A. Cox & Co.....	Troy, N. Y.....	April 9, "
Stoves.....	David L. Bartlett.....	Baltimore, Md.....	April 9, "
Stoves†.....	Richard Peterson, David Stuart, and Peter Seibert, assignors to.....	Philadelphia, Pa.....	Mar. 26, "
Stoves.....	R. Peterson.....	Le Roy, N. Y.....	April 30, "
Stoves.....	P. A. Palmer.....	Seneca Falls, N. Y.....	May 14, "
Stoves.....	Washburn Race.....	Cincinnati, Ohio.....	May 21, "
Stoves.....	D. Root.....	Providence, R. I.....	May 28, "
Stoves.....	Asa C. Brownell.....	Utica, N. Y.....	May 28, "
Stoves.....	Joel C. Bailey and Russell Wheeler.....	New Market, N. H.....	June 11, "
Stoves.....	Amos Paul.....	Rochester, N. Y.....	June 18, "
Stoves.....	Elijah P. Penniman.....	Albany, N. Y.....	June 18, "
Stoves.....	John F. Rathbone.....	Albany, N. Y.....	June 18, "
Stoves.....	John F. Rathbone.....	Troy, N. Y.....	June 18, "
Stoves.....	James Wager, David Pratt and Volney Richmond.....	Hamilton, Ohio.....	June 25, "
Stoves.....	J. E. Owens, J. Ebert and E. G. Dyer.....	Seneca Falls, N. Y.....	June 25, "
Stoves.....	Washburn Race.....	Troy, N. Y.....	July 2, "
Stoves.....	Joshua Crandall, assignor to E. Johnson and D. B. Cox.....	Braintree, Mass.....	July 9, "
Stoves.....	Calvin Doane.....	Buffalo, N. Y.....	July 9, "
Stoves.....	S. S. Jewett and F. A. Root.....	Providence, R. I.....	July 16, "
Stoves.....	Apollon Richmond, assignor to A. C. Barstow & Co.....	New York, N. Y.....	July 22, "
Stoves.....	James H. Conklin and A. W. Jones, assignors to James MacGregor, jr.....	Wilton, N. Y.....	July 22, "

\* Antedated Aug. 26, 1849.

† Antedated Dec. 27, 1849.



Stoves.....	Job E. Owens, Jacob Ebert and E. G. Dyer.....	Hamilton, Ohio.....	July 23,
Stoves.....	Reuben J. Blanchard, assignor to Billings P. Learned and George H. Thatcher.....	Albany, N. Y.....	Aug. 13,
Stoves.....	Sherman S. Jewett and F. H. Root.....	Buffalo, N. Y.....	Aug. 13,
Stoves.....	Robert Donovan.....	Pittsburg, Pa.....	Aug. 20,
Stoves.....	William L. Sanderson, assignor to S. Cole and G. C. Mosher.....	Troy, N. Y.....	Aug. 27,
Stoves.....	Charles W. Warwick.....	Philadelphia, Pa.....	Aug. 27,
Stoves.....	Joseph G. Lamb.....	Cincinnati, Ohio.....	Sep. 24,
Stoves.....	Joseph G. Lamb.....	Cincinnati, Ohio.....	Sep. 24,
Stoves.....	William Savery.....	New York, N. Y.....	Sep. 24,
Stoves.....	Reuben J. Blanchard, assignor to Billings P. Learned and George H. Thatcher.....	Albany, N. Y.....	Sep. 24,
Stoves.....	Anthony W. Jones, assignor to Edward R. Brown.....	Albany, N. Y.....	Oct. 1,
Stoves.....	Charles Gilbert and Wiche! G. Hallinan.....	Philadelphia, Pa.....	Oct. 22,
Stoves.....	Ezra Ripley, assignor to G. W. Eddy.....	Waterford, N. Y.....	Oct. 22,
Stoves.....	Ezra Ripley, assignor to G. W. Eddy.....	Waterford, N. Y.....	Oct. 22,
Stoves.....	Laben Eddy.....	Taunton, Mass.....	Oct. 29,
Stoves.....	Reuben J. Blanchard, assignor to Billings P. Learned and George H. Thatcher.....	Troy, N. Y.....	Nov. 12,
Stoves.....	Apollon Richmond, assignor to A. C. Barstow & Co.....	Providence, R. I.....	Nov. 12,
Stoves.....	D. Root.....	Cincinnati, Ohio.....	Nov. 12,
Stoves.....	William B. Gleason, assignor to.....	Boston, Mass.....	Nov. 26,
Stoves.....	James Hartshorn and Winslow Anes.....	Nashua, N. H.....	Dec. 3,
Stoves.....	Samuel Pierce, assignor to Johnson, Cox & Fuller.....	Troy, N. Y.....	Dec. 3,
Stoves.....	Morris Smith and Benona S. Gleason.....	Le Roy, N. Y.....	Dec. 10,
Stoves, coal.....	Charles A. Lambard.....	Augusta, Me.....	June 4,
Stoves, coal.....	John T. Davy.....	Troy, N. Y.....	Aug. 13,
Stoves, cooking.....	John F. Rathbone.....	Albany, N. Y.....	Apr. 16,
Stoves, cooking.....	Jeremiah D. Green and George Warren.....	Troy, N. Y.....	June 25,
Stoves, parlor.....	William L. Sanderson.....	Troy, N. Y.....	Aug. 27,
Umbrella stands.....	George W. King, assignor to Johnson, Cox & Fuller.....	Troy, N. Y.....	June 4,
Umbrella stands.....	Walter Bryant.....	Boston, Mass.....	June 4,
Umbrella stands.....	Edward J. Delany, assignor to G. L. Heins and J. L. Ad- anson.....	Philadelphia, Pa.....	



## PATENTS EXTENDED DURING THE YEAR 1850.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF ORIGINAL PATENT.	EXPIRATION.	TERM OF EXTENSION.
Cacutchouc, application to cloths.....	Edwin N. Chaffee.....	New Brunswick, N. J.....	Aug. 31, 1836	Aug 31, 1850	Seven years from Aug. 31, 1850
Dye woods and dye stuffs, machine for cutting and shaving.....	Bereah Swift.....	Washington, N. Y.....	Aug. 10, 1836	Aug. 10, "	Seven years from Aug. 10,
Friction matches.....	Eulia T. Swift, adm'r of A. D. Phillips.....	Charlestown, Mass.....	Oct. 24, 1836	Oct. 24, "	Seven years from Oct. 24, "
Printing presses.....	Isaac Adams.....	Boston, Mass.....	Mar. 2, 1836	Mar. 2, "	Seven years from Mar. 2, "
Turn-about for railroads.....	Jeremiah Myers.....	Meredith, N. H.....	May 7, 1837	May 8, 1851	Seven years from May 8, 1851
Water wheels, steam engines, &c., the art of regulating the motion of.....	Nathan Scholfeld.....	Norwich, Conn.....	May 17, 1836	May 17, 1850	Seven years from May 7, 1850
Wool, hair, &c., forming web without spinning	John Arnold, Peter U. Morgan, adm'r of, and Geo. G. Bishop.....	Norwalk, Conn.....	Oct. 1836	Oct. 20, "	Seven years from Oct. 20, 1850

## ADDITIONAL IMPROVEMENTS GRANTED DURING THE YEAR 1850.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.	IMPROVEMENT ADDED.
Freezers, ice cream.....	H. P. Masser.....	Sunbury, Pa.....	Dec. 12, 1848	Jan. 1, 1850
Stearine from oleine, process of preparing.....	John H. Smith.....	Brooklyn, N. Y.....	Apr. 1, 1849	April 9, "
Tailors' measures.....	Amos Stocker.....	Ogdensburg, N. Y.....	May 28, 1850	Sept. 3, "



DISCLAIMERS ENTERED DURING THE YEAR 1850.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.	DISCLAIMER ENTERED.
Frog for railroads.....	John W. Hoffman, ass'or to Henry A. Landry.	Philadelphia, Pa.....	Dec. 4, 1849	June 6, 1850
Turn-about for railroads.....	Jeremiah Myers.....	Camden, N. J.....	May 8, 1837	April 18. "
Turning wooden bowls, machinery for.....	Parley Hutchins, Jr., ass'or to A. Everett.....	Meredith, N. H.....	Sep. 25, 1847	Aug. 21. "
		Middlefield, Mass.....		

RENEWAL.

INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.	RENEWED.
Capstans.....	Andrew Morse, Jr.....	Boston, Mass.....	Mar. 12, 1836	Jan. 8, 1850



[J.]

## ALPHABETICAL LIST OF PATENTEES FOR THE YEAR 1850.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7297	Abbott, J. G.—see C. W. Warnick, et al.	Stoves, cooking.	V.
7298	Abendroth, William.	Printing Presses.	Extension.
7295	Adams, Isaac.	Printing presses and paper machines, apparatus for receiving and transferring to the pile sheets of paper from.	XVIII.
7421	Adams, Stephen H. and John A. Wood.	Carding and mixing wool and cotton.	III.
7485	Adams, Joseph and Levi.	Felloes, machines for cutting.	XIV.
7589	Adams, Calvin—see J. R. Livingston, et al.	Bits, expansible.	XIV.
7012	Adancourt, Clinton L.	Mowing machines.	I.
7229	Adkins, Homer.	Wheels, wrought iron car, clamp to be used in the manufacture of.	X.
7676	Aiken, Herrick.	Wheels, wrought iron car.	X.
7777	Albertson, William.	Harpoons, gun.	XXII.
7609	Alexandre, Lambert.	Vessels, submarine.	VII.
7793	Allen, Enos G. and Charles Briggs.	Planing machines, cutters for.	XIV.
7097	Allen, John L.	Carriage tops, elevating and lowering.	X.
7715	Allen, John L.	Carriage tops, braces for.	X.
7355	Allen, Oratio P.	Clothes pins, machines for slitting.	XVII.
7641	Allen, William W.	Tailors' measures.	XXI.
7817	Allen, William D.	Boiler feeder, balanced.	VI.
7502	Allen, Zachariah.	Cloth, wide, machinery for double folding.	III.
7230	Allison, William C.	Hoisting, machines for.	XII.
7501	Altender, Theodore.	Compasses for measuring, joints for.	VIII.
7298	Ambrose, Thomas A.—see Billings and Ambrose.	Churns.	I.
7077	Ames, Winslow—see W. B. Gleason.	Barrel machinery.	XIV.
7449	Andrews, John.	Vessels, model for.	VII.
7694	Andrews, William—see Sidney A. Bantz and W. Andrews.	Forks, hay, shanks of.	I.
7767	Andrews, Solomon.	Oils, filter for.	IV.
7694	Anthony, David, sr.		
7767	Antisell, Thomas.		



273	Arnold, John, Peter W. Morgan, adm'r of and Geo. G. Bishop	Wool, hair, &c. forming web without spinning	Extension.
299	Archer, E. S. and R. F. Warner	Chandeliers	Design.
7643	Archer, E. S. and R. F. Warner	Lamps	Design.
7299	Armstrong, Sam'tel T. and Charles J. Gilbert.	Gutta percha, process of working.	IV.
7279	Arrowsmith, George A.—see Walter Hunt.		
7179	Asay, Abraham M.	Dentists' chairs.	XX.
7522	Ashburn, James	Guitar heads and caps d'astra.	XVIII.
7353	Ashcroft, Edward H.	Boilers, method of applying fusible metal to	VI.
176	Ashley, Marcus B.	Water wheels, directing water upon.	XI.
7768	Ashmead, James H.—see Vine & Ashmead.		
7317	Atwood, Anson.	Stoves	V.
7335	Atwood, Anson	Stoves, coal	Re-issue.
7792	Atwood, Charles and George Kellogg	Jack chains, machine for making	II.
7064	Austin, Charles	Musical instruments, reed	XVIII.
7714	Austin, Frederick J.	Printing presses.	XVIII.
7659	Ayers, Frederick J.	Nail plate, machine for feeding	II.
268	Babbett, Avery	Spooling, machinery for	III.
7373	Babbett, Avery	Looms for weaving figured goods.	III.
6981	Babbitt, Leander—see Finch, Blaisdell & Babbitt.		
7013	Bachelder, John.	Sewing machine	III.
286	Bacon, Latrop S.	Stoves	Design.
7206	Baeder, Charles	Whips, rawhide, machines for polishing.	XXII.
7486	Bagley, Albert G.	Pen and pencil cases.	XVIII.
7280	Bagley Daniel C.—see Carey & Bagley.		
7778	Bailey James S.—see Charles T. Tuttle.	Gates for fences.	IX.
330	Bailey Jesse	Stoves	Design.
7627	Bailey, Joel C. and Russell Wheeler.	Brick presses.	XV.
180	Bailey, Yarnall—see Clayton & Bailey.	Condensers of steam engines.	VI.
7131	Baker, Collins B.	Car-couplings	X.
7557	Baldwin, Ethan.	Ovens, bake.	V.
7132	Baldwin, Hiram.	Railings, iron	Design.
7155	Baldwin, Hiram—see Morrill & Baldwin.	Stays, ladies'	XXI.
7253	Ball, Hosea.	Mills, for grinding.	Re-issue, XIII.
7422	Balis, Louisa.	Bedsteads, invalid.	XVII.
	Bantz, Sidney A. & Wm. Andrews.	Clutches, friction.	XIII.
	Barker, Alex. W.	Door springs, adjustable cord hook for.	II.
	Barlow, Nelson.	Sash stopper, spiral spring.	II.
	Barnard, Wm. B.	Door springs and levers, arrangement of.	II.
	Barnard, Win. B.	Whiffletrees, connecting with carriages	X
	Barnes, James,		



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7542	Barnes, Thomas J.	Whips, raw hide, manufacture of.	XXII.
7391	Barnes, Turner—see Fletcher & Barnes. Barnes, William T.	Quilting frames.	XVII.
7469	Barnell, Jean, Joseph, Ernest—see Leclaire & Earnell. Barstow, Benjamin.	Vessels, method of fitting the bows of.	VII.
7716	Barstow, A. C. & Co.—see Apollos Richmond.		
278	Bartlett, Daniel, Jr.	Filtering cocks.	XI.
7032	Bartlett, David L.	Stoves.	Design.
7571	Battle, William R.	Trusses for hernia.	XX.
7231	Batty, Thomas.	Sewing mallets.	VII.
161	Pauchman, Charles.	Hides, machines for breaking.	XVI.
7695	Beach, William.	Curry combs.	Re-issue.
7231	Beaumont, William D.	Compound for imparting a gloss to cloths.	IV.
7806	Beers, Elias T.	Ranges, cooking and heating air.	V.
	Beers, Smith	Irregular forms, machines for turning.	XIV.
7207	Bell, Alfred—see John Jack.		
6994	Bell, Hugh.	Balloons and their appendages.	XI.
7726	Bell, John.	Type cases, printers.	XVIII.
7558	Benedict, Charles, assignor to Hotchkiss & Merriman, Manufacturing Company.	Buckles, suspender.	XXI.
7738	Beniowski, Bartholomew.	Printing presses, cylinder.	XVIII.
7236	Beniowski, Bartholomew.	Printing.	XVIII.
7727	Bennett, J. I.—see Benj. Crawford.		
7807	Benton, Ezra R.	Bran dusters.	XIII.
7374	Bertholf, Henry W.	Straw cutters, feeding apparatus for.	I.
	Bejeman, Henry I.	Mortises, machines for boring dove-tailed.	XIV.
	Bevan, John.	Girder, arched.	IX.
7660	Bevington, Henry C.—see Knowles & Bevington.		
7450	Bickford, John C.—see Hayward & Bickford.	Loom for weaving tapestry and Brussels carpets.	III.
7256	Bicelow, Erastus B.	Hubs and axles, connecting and disconnecting.	X.
7628	Billings, A. M. & Thomas A. Ambrose.	Composition for covering hams.	IV.
7014	Billings, Hosea.	Musical scales, mode of representing.	XVIII.
	Billings, W. B.	Bedsteads, folding.	XVII.
	Binder, John.	Buckles for harness.	XVI.
7818	Bingham, Solon, Jr.		



7208	Birdseye, Charles D., assignor to Waring Lating.	Filters.	.....	XI.
7644	Birdseye, Charles D.	Cream, process of preparing.	.....	I.
7357	Bishop, George G.—see Arnold & Bishop.			
6995	Bissell, Levi.	Connecting rods of steam engines and other machinery.	.....	XIII.
7065	Black, James.	Engines, operated by steam, air and water.	.....	XI.
7645	Blackman, Samuel G.	Carding machines for preparing bats for felting.	.....	III.
7392	Blaisdell, Jacob—see Finch, Blaisdell & Babbit.			
307	Blake, William.	Spike machines.	.....	II.
321	Blanchard, Alanson.	Slats, boards, &c., apparatus for jointing.	.....	XIV.
232	Blanchard, Reuben J., ass'or to B. P. Learned and George H. Thatcher.	Stoves.	.....	Design.
7015	Blanchard, Reuben J., ass'or to B. P. Learned and George H. Thatcher.	Stoves.	.....	Design.
7849	Bleier, Frederick.	Stoves.	.....	Design.
7590	Bless, Eleazer.	Dampers for cleaning stove pipes and regulating the draft in the same.	.....	V.
7337	Blood, Asa.	Fanning mills.	.....	I.
7408	Bogardus, James.	Chairs and supporters, obstetric.	.....	XX.
7133	Bohrer, Joseph.	Buildings, iron, construction of the frame, roof and floor of.	.....	IX.
7433	Bonwill, George.	Blinds, Venetian, suspending.	.....	IX.
7882	Bookhout, Edward & Henry Cochen, Jr.	Planing slats for blinds, machinery for.	.....	XIV.
7661	Boon, James.	Morocco, machines for finishing.	.....	XVI.
7066	Boon, Peter—see Spring & Boon.	Wheels, cast iron car.	.....	X.
7116	Booth, James C.	Gold, process of refining.	.....	II.
7677	Borden, Gal.	Bread, portable soup, preparation of.	.....	XVII.
7662	Bowditch, Edwin B.	Sofa bedsteads.	.....	XVII.
7717	Bowerman, Stephen.	Harvester, cotton stalk.	.....	I.
7409	Bowers, Geo. W.	Grain cleaning machine.	.....	I.
7078	Boyd, Amos H.	Looms.	.....	III.
7850	Boyes, Burritt C.—see Nichols & Boyes.	Ventilating railroad cars.	.....	V.
7503	Brackbill, Wm.—see Sherlock & Brackbill.	Cotton stalks, cutting in the field.	.....	I.
7404	Bradford, Hezekiah and Ephraim Morris.	Starch from maize, manufacture of.	.....	IV.
7358	Bradshaw, Fields.	Weighing machines, self, for grain, &c.	.....	XII.
7047	Bragg, Thomas.	Rakes, hay, spring teeth of.	.....	I.
7358	Bramble, W. W. H. T.	Grinding, steaming grain preparatory to.	.....	XIII.
7047	Brecht, Elias—see Trissler & Brecht.	Press, cotton.	.....	XII.
7404	Breed, Zephaniah.			
7358	Bridges, Albert—see Davenport & Bridges.			
7047	Briggs, Chas.—see Allen & Briggs.			
7358	Broomell, Benj. F.—ass'or to Israel Jackson.			
7047	Brown, A. D.			



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7318	Brown, A. H.	Pipes and hose, couplings for.	XI.
7516	Brown, Charles F.	Steering apparatus.	VII.
7610	Brown, Charles F.	Harpoons, method of attaching lines to.	XXII.
7115	Brown, Christopher F.	Gas generating apparatus.	IV.
7016	Brown, Charles W.	Mills for grinding.	XIII.
7663	Brown, David S.	Plants, machines for fumigating.	I.
	Brown, Edward R.—see Anthony W. Jones.		
7359	Brown, Hiram C.	Sash, balancing.	II.
7435	Brown, James M.	Neck yokes, attaching to poles of carriages.	X.
7410	Brown, Robert.	Harpoon, gun.	XXII.
7572	Brown, Robert.	Harpoons and lances, gun.	XXII.
285	Brownell, Asa C.	Stoves.	Design.
7319	Broyles, Cain.	Water, apparatus for drawing.	XI.
7156	Bruen, John T.	Figures, cutting in relief on wood.	XVIII.
7180	Bryant, Mertoun C.	Looms for weaving piled fabrics.	III.
7452	Bryant, Mertoun C.	Looms for weaving cut piled fabrics.	III.
287	Bryant, Walter.	Umbrella stands.	Design.
305	Bryant, Walter.	Bracket, cast iron.	Design.
314	Bryant, Walter.	Blower stand.	Design.
174	Buck, Darius, Desire Buck, administratrix of.	Stoves, cooking.	Design.
7067	Buck, James.	Excavating auger.	Re-issue.
7470	Buckup, Ernst.	Air engines, method of distributing the air over the heating and cooling surfaces of.	IX.
7678	Buffum, Arnold and Philip Thorpe.	Washing gold, double acting rocker for.	VI.
7739	Bulkley, Charles S.	Enunciators, electro magnetic, for signals in hotels, &c.	II.
7769	Bulkley, Charles S.	Telegraphs, repeaters for electro-magnetic.	XVII.
7794	Bulkley, Ralph.	Ventilators, ship.	VIII.
	Bullock, Thomas—see Hamilton & Bullock.		V.
6996	Bullock, William.	Drills, grain.	I.
7487	Bullock, William, assignor to Charles Graff.	Lath cutting machines.	XIV.
	Bundy, Jonathan—see White & Bundy.		
7591	Burdett, Stephen.	Omnibuses, turning up the steps of.	X.
7114	Burgess, George.	Cap fronts, machines for cutting.	XXI.
7696	Burnham, George.	Presses for copying letters.	XII.
7851	Burnham, George.	Copying presses, damping paper for.	XVIII.



7852	Burridge, Thomas H.	Planing machines, means for preventing backlash in the feed motion of.	XIV.
	Burt, Enoch.	Loom, power.	III.
7209	Burton, Russell.	Gold washers, method of connecting the sections of.	II.
7764	Butcher, John.	Cloth, apparatus for stretching and smoothing.	III.
7517	Butler, Frederick M.	Truss pads.	XX.
7048	Butler, John.	Brick presses.	XV.
7646	Calvert, Francis A.	Cotton, machinery for ginning or picking.	III.
7471	Cameron, Charles C.	Sash stopper.	I.
7592	Camp, Harry.	Straw, machines for cutting.	I.
7033	Camp, Herman.	Candle mould apparatus.	IV.
	Campbell, John—see George Spafford.		
	Cannon, John R.—see Joseph A. Hill.		
7770	Cannon, Samuel.	Planters, seed.	I.
7728	Card, Joseph.	Presses, cheese.	XII.
7079	Carey, Augustus C. and Daniel C. Bagley.	Cloth, machinery for folding.	III.
7017	Carnell, Charles.	Brick presses.	XV.
	Carpenter, Jesse—see Cullen Whipple.		
7647	Carpenter, Joseph W.	Preparing wheat for grinding, process for.	IV.
7543	Carver, Hiram.	Scrapers used by cabinet makers.	XIV.
7750	Cary, Alanson.	Irregular forms, machines for dressing.	XIV.
7779	Case, Jarvis.	Bee hives, working the doors of.	I.
7338	Cathcart, James L.	Stoves, air-heating.	V.
7504	Cathcart, James L.	Horse powers.	XIII.
7050	Caulkins, Russell.	Supporters, utero vaginal.	XX.
	Chadbourne, Thomas—see David M. Smith.		
	Chaffee, Edwin M.	Caoutchouc, application to cloth.	Extension.
7257	Chamberlain, Dexter H., assignor to C. W. and S. J. M. Horner and W. G. Ladd.	Dividers or compasses.	VIII.
7300	Chamberlain, Dexter H. assignor to Thomas J. Whittemore.	Revolving fire arms, method of attaching cylinder in.	XIX.
7360	Chamberlain, Dexter H.	Lock for fire arms, toothed segment.	XIX.
7210	Chapin, Solomon.	Exercising chairs.	XX.
7573	Chase, F. H., Adam Weston and Leander Babbit.	Supporters, obstetrical.	XX.
7505	Chase, Mark L. assignor to William L. Chase.	Ploughs, hill-side.	I.
158	Chase, Moses, of whom George Law is assignee, of whom Richard S. Stewart is executor.	Carding and spinning machine.	Re-issue.
7718	Chase, Silas E. and O. R. Chase, assignees of O. R. Chase.	Sugar, machines for pulverizing.	XIII.
7518	Chase, William L.	Ploughs, fastening the shoes of hill-side.	I.
	Chase, William M.—see Halvor Halvorson.		
7181	Chatham, John B. H.	Mouldings, machines for planing ornamental.	XVIII.
7611	Clichester, Lewis S.	Staves, machines for dressing.	XIV.
7411	Chilson, Gardner.	Grates, fireplace.	V.
7436	Chilson, Gardner.	Stoves, parlor.	V.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7780	Chilson, Gardner.	Furnaces, air-heating.	V.
7832	Child, Orlando.	Sawing with circular saws, mills for.	XIV.
7080	Chinnoek, Charles.	Rule and socket joints.	XIV.
7593	Chollar, John B.	Grates, coal, revolving.	V.
	Churchill, William A.—see L. E. Hicks.		
7134	Clark, Alinzor.	Forks, hay and manure, fastening for.	I.
7697	Clark, Alinzor.	Forks, hay.	I.
7098	Clark, Edward S.	Curtains, window, adjustable rollers for.	XVII.
6982	Clark, James M.	Grinding and bolting machines, combined.	XIII.
7393	Clark, P. J.	Lamps, metallic, making the reservoirs of.	V.
182	Clark, Timothy.	Irregular forms, machinery for turning.	Re-issue.
7594	Clayton, Sharpless and Yarnall Bailey.	Lamps, gas, self-generating.	V.
7612	Clemens, S. A.	Pressing cotton and other substances into bales.	XII.
7451	Cleveland, John A.	Teeth, setting artificial by atmospheric pressure.	XX.
7099	Clinton, Thomas G. George H. and Edward H. Knight.	Lids for boiler holes of cooking stoves.	V.
7135	Clinton, Thomas G. George H. and Edward H. Knight.	Carriage jacks.	X.
7595	Clinton, Thomas G. George H. and Edward H. Knight.	Stoves, coal, for roasting, baking and broiling.	V.
	Clute and Brothers—see William L. Sanderson.		
7719	Coates, William B.	Harvesters, hemp.	I.
	Cochon, Henry, jr.—see Bookhout and Cochen.		
	Cole and Mosher—see William L. Sanderson.		
7679	Coleman, Willis P.	Mills for grinding.	XIII.
7437	Collier, Elisha H.	Nails, method of making by rolling.	II.
7232	Collins, Michael H.	Chimney caps.	V.
7361	Collins, Thomas M.	Gold washer, cylinder and trough.	II.
7648	Collard, William A.	Paper filers.	XVIII.
7629	Colt, Samuel.	Revolving chambered fire-arms.	XIX.
7613	Colt, Samuel.	Fire-arms, repeating.	XIX.
7362	Colver, Nathaniel, ass'or to Nath'l Colver and W. S. Damrell.	Wrench, revolving jaw.	II.
7680	Colvin, Robert J.	Seed planters, slides for.	I.
7363	Combs, Abel.	Skins, connecting with axles.	X.
7833	Conant, Joseph and Lucius Dimock.	Silk, &c., machinery for doubling and twisting.	III.
7182	Condit, Edward F. and Alfred Taylor, ass'ors to W. Eaglesfield.	Hat bodies, machines for making.	XXI.
272	Conklin, James H.	Stoves.	Design.
266	Conklin, James H., ass'or to S. B. Sexton & Co.	Stoves.	Design.



302	Conklin, James H. and A. W. Jones, ass'ors to James Mac Gregor.	Stoves.....	Design.
7488	Cook, Charles H.	Quilting frames.....	XVII.
7596	Cook, Nathan B.	Lock for fire arms.....	XIX.
7283	Cook, Ransom.	Hydraulic blowers for furnaces, &c.....	XI.
7211	Cook, Ransom.	Blast pipes for conveying heated air and gases to furnaces.....	II.
7423	Cook, Ransom.	Hydraulic apparatus for producing blast.....	XI.
7157	Cool, Peter B.	Terrets, fastening of, in harness saddles.....	XVI.
7339	Coolidge, Chas. C., ass'or to Francis Harrington and Chas. C. Coolidge.	Beadstead fastenings.....	XVII.
7597	Coston, Benton P.	Shirt studs and buttons.....	XXI.
7795	Cotter, Thos.—see Chas. A. Read.	Ploughs, gang.....	I.
6983	Cox, A. & Co.—see Joshua Crandall.	Horses' hoofs, instruments for paring.....	XXII.
6997	Cox, D. B.—see J. Crandall.	Cultivators.....	I.
279	Crafts, Ashley and Ebenezer Weeks.	Stoves.....	Design.
297	Crafts, Ashley and Ebenezer Weeks.	Stoves.....	Design.
6984	Crandall, Joshua, ass'or to A. Cox & Co.	Hemp brakes.....	III.
7049	Crandall, Joshua, ass'or to E. Johnson and D. B. Cox.	Wash mixtures.....	XVII.
7051	Crane, Jonathan and F. H. Hamilton.	Furnaces, steam boiler.....	V.
270	Crane, Stephen.	Stoves.....	Design.
271	Crawford, Benj., ass'or to Wm. B. English, J. J. Bennett, A. D. Frisbee and B. Crawford.	Stoves.....	Design.
261	Cresson, W. P., David Stuart and P. Seibert, ass'ors to W. P. Cresson.	Stoves.....	Design.
262	Cresson, W. P., David Stuart and P. Seibert, ass'ors to W. P. Cresson.	Stoves.....	Design.
7729	Cresson, Wm. P., David Stuart and P. Seibert, ass'ors to W. P. Cresson.	Stoves.....	Design.
7320	Cresson, Wm. P.—see D. Stuart.	Cores for casting, machines for making and holding.....	II.
7453	Crocker, Luther H.	Slates, machines for holding and dressing.....	XV.
7158	Crocker, Samuel E.	Brick presses.....	XV.
7730	Crossley, John, Joseph and Francis—see James Taylor.	Ventilating railroad cars.....	V.
7614	Crowell, Sommers—see Krauser, Crowell & Krauser.	Locomotive engines, apparatus for reversing or stopping.....	VI.
7375	Culbertson, James—see Williams & Culbertson.	Spinners, hand.....	III.
7258	Culbertson, Thomas and George Scott.	Bagasse, machines for drying.....	V.
	Cunningham, James.	Bee hives, entrance to.....	I.
	Cunningham, James.		
	Current, David.		
	Dakin, James H.		
	Dalton, John E. and Thomas Stevens.		



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7649	Damrell, W. S.—see Nath'l Colver.	Harvesters, grain.	I.
7472	Danford, Ebenezer.	Straw cutters.	I.
7681	Daniels, Reuben.	Vegetable cutter.	I.
7853	Daniels, Reuben.	Hydraulic blowers.	XI.
7834	Darling, Jeremiah.	Privies, apparatus for emptying.	XXII.
183	Datchiy, Florimond.	Carriages, railroad, manner of constructing so as to ease the lateral motion of the bodies thereof.	Re-issue.
7559	Davis, James G. assignor to A. B. Warner and James G. Davis	Candles, manufacture of.	IV.
7233	Davis, Robert W.	Churns.	I.
7340	Davis, Shadrach.	Road scrapers, adjustable mouth piece to.	IX.
7234	Davis, Waitman.	Saw mills.	XIV.
7751	Davis, William C.—see Lamb & Harris.		
7159	Davis, William H.	Pumps, rotary.	XI.
7284	Davy, John T.	Furnaces for heating sad irons.	V.
288	Davy, John T.	Grates for cooking stoves.	V.
7068	Davy, John T.	Stoves, coal.	Design.
	Day, David N. and Edward B.	Whip lashes.	XXII.
7650	Day, Horace H.—see John Pridham.		
7285	Day, Horace H. and Richard McMullin.	Hose, India rubber.	XI.
7160	Day, Willard.	Telescopes, submarine.	VIII.
	Dayton, Aaron O.	Photographic pictures, coloring.	XVIII.
7341	Dawson, Rollin L.—see Hyde & Dawson.		
	Delluc, Marcellin.	Leeches, mechanical.	XX
7081	De Massey, Robert—see Massey, Robert de		
7376	Dermond, John.	Fliers and spindles, arrangement of.	III.
7576	Devlan, Patrick S.	Propellers, screw, arrangement and connexion of.	VII.
7519	Dibble, Richard E.	Boiler, steam.	VI.
7235	Dickerson, Alexander.	Iron, wrought, method of making directly from the ore.	II.
7259	Dietz, Andrew.	Harness, hames.	XVI.
7808	Dietz, Andrew.	Harness, &c., rings for.	XVI.
	Dilks, Joseph.	Boilers, steam, the alarm and indicator for.	VI.
7506	Dimock, Lucius—see Conant & Dimock.		
7752	Dimpfel, Frederick P.	Boilers, steam.	VI.
	Dimpfel, Frederick P.	Furnaces for steam boilers.	VI.



7136	Dixon, Joseph	Firing kilns for pottery ware, blacklead crucibles, &c.	V.
7260	Dixon, Joseph	Steel, cast, process for making	II.
398	Doane, Calvin	Stoves	Design. XVIII.
7018	Dodd, Edwin D.	Files for keeping papers	
7364	Dodge, John C.	Spinning machines, preventing fibres from winding on drawing rollers in	III
7161	Dodge, Nehemiah	Pumps for deep wells	XI
309	Donavan, Robert	Stoves	Design. XVI.
7343	Dorn, Peter	Shoes, over	VII.
7574	Dougherty, John	Propelling boats in shallow water, method of	XII.
7183	Downer, Charles	Weighing frames	X.
7575	Drake, Imla	Boxes, compound wagon	XIII.
7630	Draper, William W.	Paint mills	III.
6998	Du Bois, John	Gins, cotton	V.
7321	Dudley, Martin R.	Driers, grain	VIII.
7394	Dunn, Arthur	Galvanic regulators for steam boilers	XVI.
7424	Durand, Francois, and Onesiphore Pecqueur, assignors to Richard E. Rabreau	Leather, machine for cutting into hollow ware forms	
7438	Dyer, E. G.—see J. E. Owens, et al.		
7034	Eaglesfield, W.—see Condit & Taylor		
7698	Eastman, Robert	Stone, machines for dressing	XV.
7137	Eberly, David	Seeding apparatus, gearing and ungearing	I.
6999	Eberly, David	Seed planters	I.
7137	Ebert, J.—see J. E. Owens, et al.		
7137	Eccles, Samuel	Looms for figured fabrics	III.
6999	Eddy, George W.	Wheels, car	X.
329	Eddy, George W.—see Ezra Ripley		
7771	Eddy, Laben	Stoves	Design. XVIII.
7302	Eddy, Oliver T.	Printing machines	II.
7138	Edes, Oliver	Rocker, submerged, for separating ores	VII.
7035	Edwards, Nelson	Vessels' holds, apparatus for registering the depth of water in	XVII.
7781	Elder, Matthew	Bedstead fastenings	XIII.
7454	Eldridge, David	Corn shellers	XIII.
7322	Ellicott, Peter F.	Churns, atmospheric	I.
7731	Elliott, Hosea	Gearing for regulating speed	XIII.
7377	Elliott, J. T.	Presses, cotton	XII.
7236	Embich, Jacob S.	Buckles, harness	XVI.
170	Emerson, Simeon F.	Churns, atmospheric	I.
7082	Emmons, Calvin, Wm. Emmons, adm'r of	Planing machine	Re-issue.
7854	Enges, Henry Adolph	Furnaces, air heating	V.
7473	England, Lewis C.	Vats for tanning hides	XVI.
	English, W. B.—see Benj. Crawford		
	Erb, John E.	Straw cutter, feeders of a	I.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7651	Erkson, Gerrett	Clevis, plough	I.
7184	Evans, Evan L.	Vessels, apparatus for trimming	VII.
7664	Evans, Henry	Ropes, machinery for making	III.
7523	Everett, Addison	Wooden bowls, machinery for turning out	XIV.
7835	Everett, Addison—see P. Hutchins, Jr.		
	Everett, Edw'd and Chas., Jr.	Carriages	X.
	Everett, Edward—see Thomas Everett.		
7237	Everett, Stephen	Temples used in weaving double cloth	III.
7185	Fahrney, Samuel, ass'or to A. & J. Fahrney.	Tools for preparing hubs for boxes	XIV.
	Fairbanks, E. & T. & Co.—see William P. Pierce.		
7652	Fairbank, John B.	Printing machines	XVIII.
	Farnsworth, Luke A.—see Lawrence & Farnsworth.		
7837	Fawkes, Joseph W.	Planters, seed	I.
7286	Ferris, Charles M. and Nathan Swan.	Brick machines, preparing clay for	XV.
7238	Fessenden, Abijah.	Filtering and drinking tubes, pocket	XI.
7162	Fessenden, Asa.	Pill boxes, machinery for making	XIV.
7615	Field, William	Washers, etc., beveling the surfaces of	XXII.
7598	Finch, Edward B.	Stoves, with circular shaking grate	V.
7019	Finch, William W., Jacob Blaisdell and Leander Babbit.	Supporters, obstetrical	XX.
7261	Finkle, Milton.	Heddles, wire, machinery for making	III.
7616	Finzel, Conrad W.	Sugars, draining	IV.
7412	Fisher, Charles F.	Shafts, etc., of sheet iron, method of making	II.
7507	Fisher, George.	Saddles, spring	XVI.
7753	Fisher, Richard A.	Washing machines	XVII.
7186	Fitch, Samuel S.	Supporters, abdominal	XX.
7836	Flanders, Joseph F.	Metal, sheet, machinery for cutting and bending	II.
7083	Flautt, George.	Boring machines, augers for	XIV.
7212	Fletcher, George, Sr.	Bee moth traps	I.
7213	Fletcher, George, Sr., and Turner Barnes	Planters, seed	I.
7301	Fletcher, George, Sr.	Drilling stone, machines for	IX.
7163	Flory, Wm. and George A. Grove.	Planter, cultivating seed	I.
	Forbes, George—see Silas Stevens.		
7617	Forbush, Eliakin B.	Writing and drawing, clamps for holding paper in	XVIII.
7395	Foster, David.	Boards, apparatus for jointing	XIV.
7117	Foster, Junius.	Hubs, connecting with axles	X.



7439	Fowler, Benjamin.	Furnaces for calcining gypsum.....	V.
	Frink, Stephen—see Norths & Frink.		
	Frisbee, A. D.—see Benjamin Crawford.		
7482	Frost, William.	Mills for grinding and crushing.....	XIII.
7599	Fuller, Albert.	Wheels, cast iron car.....	X.
7288	Fuller, Joel B. and George W. Pierce.	Trap for catching flies.....	XXII.
7214	Fulton, Andrew.	Packing, metal, compound hard and soft.....	VI.
7699	Gardner, Gervis S., assignor to G. S. Gardner and G. Rohr.	Seeding apparatus for seed planters.....	I.
7118	Garlick, Isaac D.	Churn dashers.....	I.
7577	Garlick, Isaac D.	Reciprocating motion, changing rotary motion into.....	XIII.
7378	Garretson, John G.	Looms, hand.....	III.
7783	Garvey, John.	Annunciator or bell telegraph.....	XVII.
	Gaylord, Charles S.—see Warner & Gaylord.		
7440	George, Ammi M.	Spike machine.....	II.
7052	Gesner, Abraham.	Gas, manufacture of illuminating from bitumen.....	IV.
	Gilbert, Charles J.—see Armstrong & Gilbert.		
	Gilbert, Charles and W. G. Hallman.	Stove.....	Design.
7441	Gilbert, Lemuel.	Piano fortes, upright.....	XVIII.
7830	Gilman, Samuel H.	Cut off motion for puppet valves.....	VI.
7838	Gilman, Samuel H.	Engines, horizontal, expansion gear for.....	VI.
7344	Gitt, Daniel D.	Plough cleaners.....	I.
237	Gleason, William B., assignor to James Hartshorn and Winslow Ames.	Stoves.....	Design.
	Gleason, Benona S.—see Smith & Gleason.		
7489	Goble, Daniel W., assignor to Gilbert S. Ward and George F. Musselman.	Beef, dried, apparatus for cutting.....	XVII.
7100	Goddard, Solomon and Henry Warfield.	Carriage top, raising and lowering.....	X.
7164	Goodhue, Perry.	Stoves, air heating.....	V.
6986	Goodyer, Robert Burns and Benj. Hirst, assignors to Alfred Jenks.	Looms, operating shuttle boxes in.....	III.
336	Gordon, Chas. P. and Geo. B.	Spoon handles.....	Design.
7396	Gordon, Cyrus D. and Samuel S. Gouldthrite.	Smut machines.....	XIII.
7215	Gordon, George P.	Printing presses.....	XVIII.
7000	Goshon, Joseph G.	Smut machines.....	XIII.
7740	Goshon, Joseph G.	Winnowing machines.....	I.
7239	Gosnell, Lemuel W.	Stoves, parlor, air-heating.....	V.
	Gould, Benjamin—see Joseph W. Webb.		
	Gouldthrite, S. S.—see Gordon & Gouldthrite.		
	Graff, Charles—see William Bullock.		
7720	Grant, Isaac T. and Daniel H. Viall.	Grain cradle.....	I.
7139	Grant, William W.	Flax and hemp, machinery for dressing.....	III.
7653	Graves, Samuel L.	Corn shellers.....	XIII.
7240	Gray, George H., Sr.	Sash stopper.....	II.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7425	Green, Duff.....	Embankments, levees, etc., method of forming.....	IX.
267	Green, Jeremiah D. and George Warren.....	Stoves.....	Design.
280	Green, Jeremiah D. and George Warren.....	Stoves, cooking.....	Design.
7113	Green, Rufus H.....	Seraphines.....	XVIII.
6955	Greene, Chauncey O.....	Grates, coal.....	V.
7772	Greene, Samuel S.....	Horse-shoe machinery.....	II.
177	Gregg, Isaac.....	Brick presses.....	Re-issue.
7426	Groat, Warner.....	Packing for oil boxes of axles, &c., adjusting.....	X.
7654	Groesbeeck, Sylvester.....	Cornices and mouldings, plaster, tool for forming.....	IX.
7187	Groshon, John P.....	Planters, seed.....	I.
7216	Grove, George A.—see Flory & Grove.....		
7140	Guiteau, Calvin.....	Magnetic needles, correcting.....	VIII.
7070	Hacker, George S.....	Cars, railroad.....	X.
7665	Haines, Joel.....	Washing machines.....	XVII.
	Hall, Elijah.....	Looms, stop motion of.....	III.
	Hallman, W. G.—see Chas. Gilbert.....		
7682	Halvorson, Halvor; assignor to William M. Chase.....	Loom.....	III.
7397	Hamilton, Edward.....	Tubes, copper, machinery for making.....	II.
6987	Hamilton, F. H.—see Crane & Hamilton.....		
7119	Hamilton, Farwell H. and Thomas Bullock.....	Hemp scutchers.....	III.
7508	Hamilton, William.....	Railings, iron.....	IX.
7578	Hardaway, Moore.....	Spike machines.....	II.
7053	Hardeman, J. Locke.....	Hemp, machines for cutting.....	III.
	Hare, Robert.....	Manure, preparation of animal and other.....	I.
	Harrington Francis—see Charles C. Coolidge.....		
	Harris, Conrad—see Lamb & Harris.....		
7666	Harris, Darius W.....	Thrashing machine.....	I.
7188	Harris, Sandy.....	Hoisting machines.....	XII.
7600	Harrison, John W.....	Carriages, detaching horses from.....	X.
7544	Hart, Edson.....	Planters, seed.....	I.
7700	Hart, George.....	Mowing machine, mounting cutters of a.....	I.
7289	Harvey, Thomas.....	Fastener, combined shutter and sash.....	II.
7741	Haskins, Nathan.....	Car couplings.....	X.
7524	Hartshorn, Jas.—see W. B. Gleason.....		
	Hatch, George W.....	Stanchions for cattle.....	XXII.



7241	Haverstick, Levi.....	Planters, seed, construction of drill teeth in.....	I.
7413	Hawkes, Charles W.....	Printing presses.....	XVIII.
7855	Hawkes, Charles W.....	Printing presses.....	XVIII.
7165	Hayden, Whiting.....	Drawing rollers, regulators for.....	III.
7765	Hayes, John P.....	Furnaces, portable.....	V.
331	Haynes, C. Y.....	Bas relief of Henry Clay.....	Design.
7561	Hays, Adam.....	Splints for fractures.....	XX.
7189	Hayward, Francis D. and John C. Bickford.....	India rubber cloth, process of rolling.....	IV.
7020	Heath, John E.....	Harvesting machines.....	I.
7520	Heath, John E.....	Grain, machines for raking and binding.....	I.
7096	Heiss, James P.....	Studs for shirt bosoms.....	XVIII.
7521	Henderson, Albert N.....	Ayes and noes, application of electro-chemical printing in colors for taking.....	XXII.
7683	Herndon, John J.....	Harvester, rice.....	I.
7701	Hey, Moses.....	Yarn, machinery for doubling and twisting.....	III.
7474	Hibbs, Jonathan.....	Thrasher, clover, setting the teeth on the concave of a.....	I.
7242	Hicks, Daniel.....	Hammer, forge, attachment of the, to its helve.....	II.
7839	Hicks, Lucien E., assignor to William A. Churchill and James Stanley.....	Eyelets, machine for making.....	II.
7490	Hight, Cornelius R. and John.....	Churn dashers, spiral.....	I.
7545	Hill, Joseph A., assignor to John R. Cannon and Abner Hobbs.....	Ballot boxes.....	XXII.
7166	Hills, Edwin.....	Presses, oil.....	XII.
173	Hinton, John.....	Harvesters of clover heads and other grain.....	Re-issue.
7190	Hirst, Benjamin—see Goodyer & Hirst.....	Steam, method of employing the exhaust.....	VI.
7036	Hoagland, George H.....	Corn shellers, concave of.....	XIII.
7243	Hoats, Daniel.....	Railroad frog, oscillating, self-adjusting.....	IX.
7303	Hobbs, Abner—see Joseph A. Hill.....	Lamps, safety.....	V.
7618	Hodges, Alexander—see Cullen Whipple.....	Frog for railroads.....	Disclaimer.
7491	Hoffman, John W.....	Rakes, hay, fastenings of.....	I.
7509	Hoffman, John W., assignor to Henry W. Landry.....	Manure, carts, for spreading.....	I.
168	Hogle, Orange W.....	Knitting machines.....	III.
7702	Holland, Joel K.....	Pumps.....	Re-issue.
7601	Hollen, Joseph.....	Comfits, kettle for manufacturing.....	XVII.
7414	Holly, Birdsil.....	Dryers, grain.....	V.
7415	Holt, William H.....	Brick presses.....	XV.
7455	Homer, C. W. & S. J. M.—see Dexter H. Chamberlain.....	Ploughs, gang.....	I.
		Telegraphs, electric.....	VIII.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7809	Horton, William H.	Tin cutting and bending machines, arrangement of the bending rollers in.	II.
	Hotchkiss & Merriman, Manufacturing Co.—see Charles Benedict.		
7167	Hotchkiss, Gideon.	Saw mills, noddle irons for.	XIV.
7101	Hotchstraser, Henry	Locking portable safes to the floor.	XXII.
7365	Houghton, Joel.	Table furniture, machines for washing.	XVII.
7840	Houghton, Joel.	Grain cradle fingers.	I.
274	House, Samuel A.	Stoves.	Design.
7562	Houston, George.	Weighing machines.	XII.
7084	Hovey, Alvan.	Rakes, horse.	I.
7563	Hovey, William H.	Boxes and axles, packing.	X.
7819	Hovey, William H.	Axles and shafts, bearings for.	X.
	How, Thos. P.—see Yaw & How.		
7456	Howard, Jason G.	Tacks, carpet, machine for forming washers and attaching them to.	II.
7667	Howe, Ephraim.	Burning fluid.	V.
175	Howe, William.	Bridges and other structures, constructing the truss frames of.	Re-issue.
7021	Howell, John and Wm. D., and Joseph Sipe.	Clevis, substitute for the.	I.
7001	Hoyt, Thomas.	Tobacco stems, curing.	XXII.
7085	Hubbard, M. G.	Carriage bodies, hanging.	X.
7796	Hubbard, M. G.	Carriage bodies, hanging.	X.
7037	Hubbard, William U.	Valve, grid iron slide.	VI.
7002	Hughes, William M.	Ore washers.	II.
163	Hunt, Walter, assignor to William R. Palmer.	Cartridge, method of attaching a ball to.	Re-issue.
164	Hunt, Walter, assignor to George A. Arrowsmith.	Ball, loaded.	Re-issue.
7602	Hunter, James, assignor to Jeremiah Knight.	Printing calico, mode of cleansing and drying gum elastic bands in.	XVIII.
	Hunter John W.—see Radley & Hunter.		
7191	Huntley, Hosea H.	Stoves, cooking.	V.
	Hutchins, Parley, Jr., assignor to Addison Everett.	Turning wooden bowls, machinery for.	Disclaimer.
7069	Hutchinson, Charles B.	Staves, machines for cutting.	XIV.
7416	Hutchinson, Charles B.	Rule, board and log.	VIII.
382	Hutchinson, James, ass'or to D. A. E and N. B. Powers.	Floor cloth, painted.	Design.
7217	Hyde, Ellsworth H. and Rollin L. Dawson.	Pens, fountain.	XVIII.



7345	Hyde, James R.	Stoves, cooking.	V.
7086	Ingersoll, James	Trucks, Railroad.	X.
7192	Innis, James R.	Hide handling cylinders, beaters in	XVI.
7218	Iverson, Hans	Revolving breech fire arms.	XIX.
7379	Jack, John, ass'or to Alfred Bell.	Wickets for lock gates.	IX.
7072	Jackson, Charles and James Moir	Carding and drawing wool, engines for	III.
7304	Jackson, Henry	Stoves, double cooking.	V.
326	Jackson, Israel—see Benj. F. Bröomell.	Grate frame and fender.	Design.
7022	Jackson, James L.	Cider mills.	XIII.
7054	Janes, Adrian	Heating air by hot water, apparatus for.	V.
7721	Jenkins, Jacob	Pegging jack	XVI.
7380	Jenks, Alfred—see Goodyer & Hirst.	Staves, machinery for sawing	XIV.
7219	Jenny, Edwin	Cutters, machines for forming rotary	II.
7492	Jennings, Andrew	Lamp tubes	V.
7244	Jennings, Isaiah	Lock, revolving plate and tumbler	II.
300	Jennings, Lewis	Stoves	Design.
308	Jewett, S. S. & F. H. Root	Stoves	Design.
7619	Jewett, S. S. & F. H. Root	Stoves	V.
7457	Jewett, S. S. & F. H. Root	Shutters, the hinge of rolling iron	II.
7262	Johnson, A. Livingston	Stoves, machinery for sawing	XIV.
7168	Johnson, Cox & Fuller—see Samuel Pierce.	Cutters, machines for forming rotary	II.
7797	Johnson, Cox & Fuller—see George W. Ring.	Lamp tubes	V.
325	Johnson, E.—see J. Crandall.	Lock, revolving plate and tumbler	II.
7773	Johnson, Jasper	Stoves	Design.
7856	Johnson, John	Stoves	Design.
7564	Johnson, John, ass'or to Elias Johnson.	Stoves	V.
7684	Johnson, John, ass'or to Elias Johnson.	Stoves	V.
7755	Johnson, M. Y., adm'r of James H. Johnson	Stoves	V.
7459	Jones, A. W.—see Conklin & Jones.	Stoves	V.
7565	Jones, Anthony W., ass'or to Edward R. Brown.	Stoves	V.
7245	Jones, Aquilla	Stoves	V.
7323	Jones, Henry C.—see Thomas Slaight.	Stoves	V.
7417	Jones, John	Stoves	V.
7810	Jones, Wm. B.—see Whipple & Jones.	Stoves	V.
7564	Judd, Allen	Stoves	V.
7684	Judd, Oliver B.	Stoves	V.
7755	Judson, Junius & Alfred, ass'ors to Junius Judson.	Stoves	V.
7459	Keagy, Abraham	Stoves	V.
7565	Kean, W. B.	Stoves	V.
7245	Keeny, Abel	Stoves	V.
7323	Keep, James M.	Stoves	V.
7417	Kellogg, George—see Atwood & Kellogg.	Stoves	V.
7810	Kelly, Oliver A.	Stoves	V.
7810	Kelly, William	Stoves	V.
7262	Johnson, John, ass'or to Elias Johnson.	Stoves	V.
7168	Johnson, John, ass'or to Elias Johnson.	Stoves	V.
7797	Johnson, M. Y., adm'r of James H. Johnson	Stoves	V.
325	Jones, A. W.—see Conklin & Jones.	Stoves	V.
7773	Jones, Anthony W., ass'or to Edward R. Brown.	Stoves	V.
7856	Jones, Aquilla	Stoves	V.
7564	Jones, Henry C.—see Thomas Slaight.	Stoves	V.
7417	Jones, John	Stoves	V.
7810	Jones, Wm. B.—see Whipple & Jones.	Stoves	V.
7564	Judd, Allen	Stoves	V.
7684	Judd, Oliver B.	Stoves	V.
7755	Judson, Junius & Alfred, ass'ors to Junius Judson.	Stoves	V.
7459	Keagy, Abraham	Stoves	V.
7565	Kean, W. B.	Stoves	V.
7245	Keeny, Abel	Stoves	V.
7323	Keep, James M.	Stoves	V.
7417	Kellogg, George—see Atwood & Kellogg.	Stoves	V.
7810	Kelly, Oliver A.	Stoves	V.
7810	Kelly, William	Stoves	V.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7025	Kelsey, George R.	Buckles	XVI.
7120	Kempton, Humphrey	Clothes frames	XVII.
7023	Kennish, William, ass'or to Cornelius S. Van Wagoner	Valves of hydraulic engines, arrangement of the	XI.
7525	Kershaw, Edward.	Locks, prism, attachment of	II.
313	King, John C.	Bust of Daniel Webster	Design.
7141	King, Robert J.	Ploughs, corn	I.
7169	Kinsley, Lyman	Wheels, cast iron car.	X.
7170	Kinsley, Lyman	Wheels, cast iron car.	X.
6988	Kimball, John and Harvey Rice.	Brakes, connexions of with cars.	X.
7526	Kirkham, Peter.	Hooks and eyes, attaching to paper cards.	XXI.
7024	Kittle, Robert.	Tonguing and grooving, machinery for	XIV.
	Knab, David C.—see Poisat & Knab.		
	Knight, Geo. H. and Edward H.—see Clinton & Knights.		
	Knight, Jeremiah—see James Hunter.		
7171	Knight, Sylvanus.	Steam boilers, interior arrangement of.	VI.
7546	Knowles, Calvin C.	Gold, process for amalgamating.	IV.
7475	Knowles, Hazard and Henry C. Bevington	Harvester; cutters and rakers of a grain and grass.	I.
7603	Knowles, Hazard.	Saws	XIV.
7324	Knowles, Jonathan.	Looms, let off motion of.	III.
7774	Krauser, John, Sommers Crowell and Cyrus Krauser	Railings, iron.	IX.
7798	Krebs, Charles W.	Pens, fountain	XVIII.
162	Krechler, Charles A.	Distilling apparatus	Re-issue.
7263	Ladd, W. G.—see Dexter H. Chamberlain.		
260	Ladd, W. G., Jr.	Level, fluid	VIII.
322	Lamb, Joseph G. and Conrad Harris, ass'or to W. C. Davis.	Stoves	Design.
323	Lamb, Joseph G.	Stove	Design.
7055	Lamb, Joseph G.	Stove	Design.
340	Lamb, Josiah.	Tables, self-waiting	XVII.
7220	Lambard, Charles A.	Stoves	Design.
	Lamborn, Lewis.	Cultivator teeth	I.
	Landry, Henry A.—see John W. Hoffman.		
7476	Lane, Benjamin J.	Respiring apparatus	XX.
7703	Lane, Thomas W.	Gas metres	IV.
7305	Lanergan, Henry	Bridges, arch truss for	IX.
7784	Langenheim, Frederick.	Photographic pictures on glass, &c.	XVIII.



7785	Larkin, John E.	Augers, attaching to their handles.	XIV.
7121	Larrabee, Ephraim.	Refrigerators	XVII.
	Latting, Waring—see Charles D. Birdseye.		
	Law, George—see Moses Chase.		
	Lawrence, A.—see C. W. Warnick, et al.		
7246	Lawrence, Jabez F. and Luke A. Farnsworth.	Blind and shutter opener and fastener.	II.
7841	Lazelle, William H.	Fasteners, sash.	II
	Learned, Billings P.—see Reuben J. Blanchard.		
	Learned, B. P. and George H. Thatcher—see Reuben J. Blanchard.		
7668	Leavitt, O. S.	Hemp, drawing and parting fibres of.	III.
7351	Leclaire, Edme Jean and Jean Joseph, Ernest Barnel.	Oxide of zinc, manufacture of the.	IV.
7704	Lee, John.	Eaves trough and gutter machine.	II.
7820	Leffel, James	Lever jacks.	XII.
	Leibrandt, F.—see C. W. Warnick, et. al.		
7493	Leonard, George, Jr.	Fire arms, revolving hammer.	XIX.
7381	Lewis, Spencer	Wood; machines for sawing.	XIV.
7264	Lewis, Spencer	Bedsteads, machinery for cutting screws on the rails of.	XVII.
7172	Lidgerwood, Thomas.	Lewis, lever.	XII.
7287	Lillie, John H.	Electro-magnetic engines.	VIII.
179	Livingston, Lawreston R., John J. Roggen and Calvin Adams.	Door knobs; shanks of.	II.
7477	Locke, John.	Levels, collimating.	VIII.
7510	Locke, John	Compasses, surveyors.	VIII.
	Lombard, Sanford H.—see A. M. Rice.		
7154	Long, James.	Gas metres	IV.
7247	Loomis, Osbert B.	Churns, rotary	I.
7842	Loper, Richard F. and Jonn W. Nystrom.	Engine, steam, arrangement of	VI.
7265	Low, John	Harness hames	XVI.
7685	Lupton, Lewis.	Carriages, dash board for.	X.
7142	MacGregor, James, Jr.	Ranges, cooking and air heating furnaces connected therewith.	V.
7143	MacGregor, James, Jr.	Furnaces, air heating.	V.
7193	MacGregor, James, Jr.	Stoves, double oven cooking	V.
	MacGregor, James, Jr.—see Conklin and Jones.		
7756	Macomber, A. S.	Straw cutters.	I.
6990	Maguire, William	Fastener and mover, blind and shutter.	II.
7003	Maguire, William.	Sash, counterbalancing by means of a heavy weight.	II.
7026	Maguire, William.	Lock, door.	II.
7669	Manan, Jason M.	Stereotype plates, casting.	XVIII.
7511	Mallerd, William	Compounds, sizing for warps or yarns	IV.
7655	Mallory, George	Daguerreotype plate holders.	XVIII.
7442	Maltby, Benj. K., ass'or to Ira M. Mead.	Grate, apparatus for raising the, in cooking stoves.	V.
6989	Mareau, Ransom	Washing machines.	XVII.
7173	Marquart, John, Jr., ass'or to Henry Schreiner.	Water casks, gauge for.	XI.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7527	Marsh, Joseph	Churn dashers.	I.
7443	Marston, William W.	Breech pin piston, devices for holding and moving.	XIX.
93	Masser, H. B.	Freezers, ice cream	Additional imp'mt.
7342	Massy, Robert de.	Sugar, defecating.	IV.
7811	Mather, Orville	Spokes, machines for dressing.	XIV.
7636	Mathews, Moses M.	Ink, printers', use of rosin oil in.	IV.
7821	Mathiot, George	Electrotyping.	XVIII.
7799	May, H. H.	Rails of railroads, method of securing.	IX.
7418	May, Philip—see Bathelémy Thimmonier, Sr.		
7857	May, Samuel S.	Chairs, nursery.	XVII.
	Mayfield, William D.	Pumps, attachments to, for agitating the surface of the water in the well.	XI.
7382	Maynard, James A.	Tuyers, devices for discharging ashes from	II.
7757	McCoy, William.	Kilns, lime.	XV.
7670	McCulloch, Richard S.	Gold bullion, process of reducing.	II.
7122	McDougal, Samuel T.	Scale beams.	XII.
7248	McElwee, John V.	Mattresses, spring	XVII.
7566	McGriff, Allen R.—see Joseph Pollock.		
7056	McKinney, A.	Wagon tops, apparatus for regulating the setting of bows in.	X.
	McLaughlin, Thomas	Valves, puppet, expansion gear for.	VI.
7800	McMullin, Richard—see Day & McMullin.		
	McNair, Simon	Sausage stuffers	XVII.
7528	Mead, Ira M.—see Benj. K. Maltby.		
7858	Meinicke, Charles J.	Distilling spirits of turpentine.	IV.
7057	Mellish, Henry	Vaccinating instruments	XX.
7174	Melsens, Louis Henri F., ass'or to Louis de Saulles	Sugar, manufacture of	IV.
169	Menefee, Alexander F.	Flouring mills	XIII.
	Merrick, Solyman	Screw machines, feeders for.	Re-issue.
7671	Merrick, S. V.—see John H. Towne.		
7494	Metcalf, Joseph.	Electricity, removing from wool in the process of manufacture.	III.
7786	Meyer, Conrad	Pianos, sounding boards for.	XVIII.
7579	Middleton, Elijah C., Edward Nevers and Rob. Neale	Printing presses, copper and steel plate.	XVIII.
7478	Millar, John C.	Fulling mills	III.
	Miller, Joseph R.	Amalgamator, re-immersing.	II.
7004	Miller, Lewis W.	Boring instruments, connecting cutters to shafts of.	XIV.



7567	Milligan, Robert.....	Ornamenting textile fabrics.....	XVII.
7529	Milner, George B.....	Valve gear for steam engines.....	VI.
7073	Moir, James—see Jackson & Moir.....		
7346	Montgomery, Richard.....	Punching between rollers, method of.....	II.
7742	Montgomery, Richard.....	Excavator, the screw.....	IX.
7221	Moore, Leverett.....	Boilers, corrugated.....	VI.
7479	Moore, Lewis.....	Printing floor oil cloth.....	XVIII.
7427	Morgan, Gideon.....	Planters, seed, seeding apparatus of.....	I.
	Morgan, Peter U.—see Arnold & Bishop.....	Cars for plank roads, wooden rails, &c.....	X.
7604	Morrill, Alden R. and Hiram Baldwin.....	Drilling machines, self-acting, adjustable feed gear for.....	II.
7743	Morris, Ephraim—see Bradford & Morris.....		
7656	Morrison, John.....	Bedstead fastenings.....	XVII.
	Morrison, William.....	Ploughs, spring beams to.....	I.
7266	Morse, Andrew, Jr.....	Capstans.....	Renewal.
166	Mortimer, Charles.....	Paint, process of making from bituminous coal.....	IV.
7347	Mott, Jordan L.....	Stoves, cooking.....	V.
7366	Mott, Jordan L.....	Stoves, cooking.....	V.
7657	Mott, Jordan L.....	Stoves, cooking.....	V.
7687	Mott, Jordan L.....	Roadway for railroad cars and ordinary vehicles.....	IX.
	Murkland, Willian and Joseph Milner.....	Weavers' shuttle.....	III.
	Musselman, Geo. F.—see Daniel W. Goble.....		
	Myers, Jeremiah.....	Turn about for railroads.....	Disclaimer and ex- tension.
7460	Myers, Nathaniel and Frederick C. Smith.....	Sash stopper, arrangement of.....	II.
7271	Nash, Adkins.....	Thrashers, endless aprons for.....	I.
7348	Nash, William R.....	Churn dasher, working a rotary and vertical.....	I.
7620	Neal, David S.....	Car couplings.....	X.
	Neale, Robt.—see Middleton, Nevers & Neale.....		
7144	Nelson, Charles M.....	Stoves cooking.....	V.
7461	Nelson, John R.....	Straw cutters, mounting the knife of.....	I.
	Nevers, Ed.—see Middleton, Nevers & Neale.....		
7580	Nevins, William R.....	Crackers, machines for cutting.....	XVII.
	New England Screw Co.—see Cullen Whipple.....		
7787	Newman, Martin, 2d.....	Excavating machines.....	IX.
7581	Newton, Luke Vanderveer.....	Types, metallic, engraved plates, &c., preparing the face of.....	XVIII.
7306	Nichols, William R. and Burritt C. Boyes.....	Grates, furnace, coal stirrers for.....	V.
7480	Nock, Joseph.....	Lock bolt for shutters.....	II.
7027	Norcross, Nicholas G.....	Saw mills, circular.....	XIV.
7087	Norcross, Nicholas G.....	Planing machines.....	XIV.
7398	North, Alvin and Oliver B., and Stephen Frink.....	Buckles, machinery for making four sided.....	XVI.
7194	Nystrom, John W.....	Propeller, centripetal.....	VII.
	Nystrom, John W.—see Loper & Nystrom.....		



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7605	Odeon, Tilgath.	Trusses, method of attaching yards to.	VII.
7530	Olcott, Adrian	Stone, rubbing and polishing.	XV.
7175	O'Meara, Mary W.	Supporters, abdominal.	XX.
7531	O'Neil, John	Churns, atmospheric.	I.
7195	Ostrander, Wm. and Wm. Webster	Tubes, method of forming sheet metal.	II.
7621	Ostrander, J. F.	Planing machines.	XIV.
7812	Otis, Melville.	Nail plate feeder and turner.	II.
294	Owens, J. E., J. Ebert and E. G. Dyer.	Stoves.	Design.
303	Owens, J. E., J. Ebert and E. G. Dyer.	Stoves.	Design.
7732	Pagett, Wm. C.	Ploughs, subsoil.	I.
7642	Palmer, Aaron.	Planters, seed, seeding rollers of a.	I.
281	Palmer, P. A.	Stoves.	Design.
7672	Palmer, P. A.	Ovens, heating elevated.	V.
7547	Pahner, Wm. R.—see Walter Hunt.		
7145	Pannabecker, Jesse.	Barrels for fire arms, method of making.	XIX.
7608	Paris, Charles E. and Charles H.	Composition for enameling hollow ware.	IV.
7428	Park, Austin F.	Telegraph, electric, manipulator.	VIII.
7307	Parker, Charles H.	Bedstead fastenings.	XVII.
7548	Parkhurst, Stephen R.	Gins, cotton.	III.
7074	Parkinson, Thomas.	Gates, hanging and operating.	IX.
7125	Parmelee, Dubois D.	Calculating machines.	VIII.
7383	Parry, John C.	Casting chilled rolls, method of giving a rotary motion to metal in.	II.
7859	Parry, John C.	Casting rolls, method of giving rotary motion to fluid iron in.	II.
7325	Parsons, E. H. and S. E.	Castings, hollow, method of loosening metallic cores from.	II.
7367	Patterson, Horace.	Saws, hanging in saw mills.	XIV.
7290	Patterson, James.	Splint machines.	XIV.
289	Paul, Amos.	Carriages.	X.
304	Paul, Amos.	Stoves.	Design.
7038	Pawling, John.	Grate, portable.	Design.
7399	Payne, Charles.	Tuyere.	II.
7146	Payne, William.	Preserving wood, processes for.	IV.
7058	Pearl, Oliver.	Cars, apparatus for retaining on the rails.	X.
7744	Pease, Dan., Jr.	Bobbins upon spindles, driving.	III.
		Grain screens, rotary.	I.



7267	Pease, Julius A.	Sash-bearer, elastic roller.	II.
172	Pecare, Jacob and Josiah M. Smith	Fire arms, concealed trigger for.	Re-issue.
7326	Peck, Samuel.	Daguerreotype plates, holding.	XVIII.
7268	Pecqueur, Onesiphore—see Durand & Pecqueur.		
7481	Pierson, Jacob.	Planters, seed, gearing for.	II.
7368	Pierson, Jacob.	Harvester, arrangement of cutters in a grass and grain.	I.
290	Pelton, A. S.	Thrashing machines.	I.
7495	Penniman, Elijah P.	Stoves.	Design.
7822	Pennock, Samuel and Morton	Planters, seed, seeding apparatus of.	I.
7482	Pennock, Samuel and Morton	Planters, seed.	I.
7496	Pepper, John W.	Lozenges, machines for cutting.	XVIII.
7249	Percival, Orville B. and Asa Smith.	Chargers attached to fire arms.	XIX.
7532	Perley, Charles.	Stoppers, cat head and shank painter.	VII.
7147	Perley, Charles.	Windlass, jigger.	XII.
	Perry, Alonzo D.	Cartridges, winged metallic.	XIX.
	Perry, David—see Slaughter & Perry.		
7123	Perry, John G.	Meat cutting apparatus.	XVII.
275	Peterson, Richard, David Stuart and Peter Seibert, assignors to Richard Peterson	Stoves.	Design.
7059	Phelps, Edward.	Gearing for sugar cane mills.	XIII.
7269	Phillips, Alonzo D.—see E. T. Swift.	Fire, apparatus for extinguishing.	V.
	Phillips, William H.		
7775	Pierce, Geo. W.—see Fuller & Pierce.	Stoves, cooking.	V.
338	Pierce, Samuel.	Stoves.	Design.
7270	Pierce, Samuel, ass'or to Johnson, Cox & Fuller.	Scale beams.	XII.
7349	Pierce, William P. ass'or to E. and T. Fairbanks & Co.	Straw carriers.	I.
7758	Pierpont, William.	Carriages, running gear of.	X.
7568	Pine, Joseph, ass'or to Benjamin Pine.	Piano fortes.	XVIII.
7250	Pirson, James.	Condenser, surface for steam engines.	VI.
7272	Pirson, Joseph P.	Regulators for machinery, hydraulic.	XIII.
	Pitcher, Leman B.		
	Plumb, Hiram—see West & Plumb.		
7497	Pohl, Henry.	Paper, machinery for measuring pulp in the manufacture of.	III.
7124	Poisat, Anthony M. and David C. Knab.	Distilling oleaginous matter.	IV.
7582	Pollock, George.	Registers, hot air.	V.
7104	Pollock, Joseph, Allen R. McGriff, administrator of the estate of.	Hulling clover seed.	I.
7005	Pomeroy, Ebenezer G.	Iron, coating with copper, or its alloy.	II.
7102	Pomeroy, Elisha M.	Buttons, process of varnishing.	XXI.
7512	Poppenhusen, Conrad.	Veneers, &c. machines for cutting.	XIV.
7444	Post, Nathan.	Stirrups, safety.	XVI.
7745	Porter, Bennett, Jr.	Hats, machinery for pressing.	XXI.
7059	Potter, Merritt F.	Furnaces, portable.	V. Re-issued.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
181 .....	Potter, Merritt F. ....	Furnaces, portable .....	Re-issue.
7462 .....	Potter, Nathaniel .....	Roads, machine for repairing .....	IX.
7060 .....	Potts, Lawrence H. ....	Piles, etc., method of sinking hollow, by exhausting the air from the interior of the same .....	IX.
7228 .....	Powers, D., A. E., & N. B.—see James Hutchinson.	Printing floor oil cloths .....	XVIII.
7273 .....	Powers, Nathaniel B. ....	Sprinkling streets, &c., apparatus for .....	XI.
7196 .....	Pratt, David—see Wager, Pratt & Richmond.	India rubber, use of oxide of tin in the manufacture of .....	IV.
7103 .....	Prescott, Jedediah—see Rembert & Prescott.	Fences, portable .....	IX.
7733 .....	Price, Joseph D. ....	Carriages, apparatus for releasing horses from .....	X.
7197 .....	Pridham, John, assignor to Horace H. Day .....	Steering apparatus .....	VII.
7705 .....	Purdy, Peter M. ....	Harvester, grain and maize .....	I.
283 .....	Pyron, Tapley B. ....	Stoves .....	Design.
295 .....	Quimby, Phineas P. ....	Stoves .....	Design.
7040 .....	Quincy, Edmund .....	Spark arresters .....	VI.
7106 .....	Rabeau, Richard E.—see Durand & Pecqueur.	Harness, breast plate for .....	XVI.
7107 .....	Race, Washburn .....	Bedstead fastenings .....	XVII.
7198 .....	Race, Washburn .....	Pumps for ships, &c. ....	XI.
7483 .....	Radley, James and John W. Hunter .....	Stoves, cooking, construction of .....	V.
291 .....	Ramsdell, Orrin, assignor to Jos. B. & Sylvanus Sawyer.	Stoves .....	Design.
292 .....	Ramsey, Robert .....	Stoves .....	Design.
306 .....	Ransom, Franklin .....	Stoves, coal .....	Design.
7251 .....	Rathbone, John F. ....	India rubber springs for cars, etc., manufacture of .....	IV.
7706 .....	Rathbone, John F. ....	Spring, vulcanized India rubber .....	X.
7274 .....	Ray, Fowler M. ....	Fulling cloth, machinery for .....	III.
7126 .....	Ray, Fowler M. ....	Plough cleaners .....	I.
7063 .....	Read, Charles A. and Thomas Cotter, assignors to Charles A. Read .....	Steering apparatus, parallelogram .....	VII.
7028 .....	Read .....	Flour bolts .....	XIII.
7843 .....	Reasin, James F. ....	Spindles, bobbins for spinning .....	III.
7222 .....	Reed, Jesse .....	Cores for castings, composition for making .....	II.
	Reed, John M. and William B. Willis .....	Thrashing harvesters .....	I.
	Reed, Josiah G. ....		
	Rees, Edward .....		
	Rembert, Samuel S. ....		



7631	Rembert, Samuel S. and Jedediah Prescott.	Cotton, picking from the bolls in the field.	I.
7734	Renwick, Edward S.	Chair, wrought iron railroad.	IX.
7429	Ressigne, William F.	Mattresses, spring.	XVII.
7223	Reynolds, Ira.	Ploughs, clevis.	I.
7369	Reynolds, O. L.	Sewing machines.	III.
7823	Rhodes, Dexter B.	Planters, seed.	I.
7275	Rice, Augustus M., assignor to Sandford H. Lombard and A. M. Rice.	Chimney caps.	V.
7583	Rice, Harvey—see Kimball & Rice.	Boilers, steam, registers for.	VI.
7350	Rice, James D.	Valves, slide, arrangement of several in the same steam chest.	VI.
301	Richardson, Cyrus.	Stoves.	Design.
333	Richmond, Apollos, assignor to A. C. Barstow & Co.	Stoves.	Design.
7533	Richmond, Apollos, assignor to A. C. Barstow & Co.	Cotton batting, apparatus for sizing and drying.	III.
7105	Richmond, Volney—see Wager, Pratt & Richmond.	Dough, method of kneading.	XVII.
7148	Rider, Elias P.	Glucose, process in the manufacture of.	IV.
310	Rider, Henry N.	Stoves, parlor.	Design.
7291	Riley, George.	Stands, the construction of bases for.	XVII.
327	Ring, George W., assignor to Johnson, Cox & Fuller.	Stoves.	Design.
328	Ripley, Ezra.	Stoves.	Design.
159	Ripley, Ezra, assignor to Geo. W. Eddy.	Churns.	Re-issue.
7006	Ripley, Ezra, assignor to Geo. W. Eddy.	Churns.	I.
7400	Robbins, Zenas C.	Fanning mills.	I.
7824	Roberts, Jesse.	Sewing machines.	III.
7788	Robertson, John W.—see John G. Webster.	Pessaries.	XX.
7569	Robinson, Frederick R.	Ventilators, ship.	V.
7088	Robinson, Jonathan H.	Bedclothes, clasps.	XVII.
7463	Robinson, Warren.	Cultivator, weed cutters of a.	I.
6991	Rockwell, Francis A.	Stump extractor, wheel and axle.	IX.
7844	Rodger, Charles.	Mills for grinding.	XIII.
7513	Rogers, John.	Planters, seed, seeding apparatus of.	I.
7845	Roggen, John J.—see L. R. Livingston & Co.	Seeding cylinders, oscillating.	I.
284	Rohr, George.	Stoves.	Design.
334	Rohr, David E.	Stoves.	Design.
160	Root, D.	Stoves, cooking.	Re-issue.
7674	Root, F. H.—see Jewett & Root.	Water wheels.	XI.
7089	Root, F. H.—see Jewett & Root.	Tanning apparatus.	XVI.
	Root, James.		
	Rose, Timothy.		
	Rosensteel, William H.		



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7384	Ross, Charles	Canals, feed, regulators for	IX.
7759	Rouse, Wanton	Spinners, cop, operating the coping rail of	III.
7199	Routzahn, Nathaniel	Churn dashers	I.
7327	Rowe, Bradford	Leather, apparatus for splitting and stretching	XVI.
335	Rowe, Bradford	Leather, cutting and stretching	Re-issue.
7292	Royce, John S.	Carriage plates	Design.
7308	Ruck, John	Piano forte, action	XVIII.
7584	Ruck, John	Piano fortes	XVIII.
178	Ruggles, Stephen P.	Metal, sheet, &c., machine for cutting	II.
7149	Ruggles, Stephen P.	Printing presses	Re-issue.
7534	Russell, Charles W.	Fire places and throats of chimneys, construction of	V.
7813	Sabbaton, Joseph A.	Gas, coal, purifying	IV.
7293	Sabin, Harvey W.	Rakes, horse	I.
269	Sage, Marcus & Silas S.	Planter, seed, attachment of harrow to	I.
269	Sanderson, William L., ass'or to Clute & Brothers.	Stoves	Design.
311	Sanderson, Wm. L.	Stoves, cooking	Design.
7294	Sanderson, Wm. L., ass'or to S. Cole & G. C. Mosher.	Stove	Design.
7688	Sandoe, Anthony	Planters, seed, gearing of	I.
7150	Sanford, Gelston	Auger handle	II.
324	Saulles, Louis de—see Louis H. F. Melsens.	Axles, mail	X.
7200	Saunders, William H.	Stoves	Design.
7309	Savery, William	Spike machines, movement of the pointing dies in	II.
7846	Sawyer, Edmund	Brick presses	XV.
7370	Sawyer, Jos. B. and Sylvanus—see Orrin Ramsdell.	Ships' timbers, instruments for laying down curves of	VII.
7707	Sawyer, Nathan	Buckles, suspender	XXI.
7385	Scales, Charles	Sofa bedsteads	XVII.
7760	Scarlett, William	Rubbing surfaces for regulating abrasion, form of	XIII.
	Scarritt, Russell	Fats and oils, hardening	IV.
	Schiele, Christian	Water wheels, steam engines, &c., the art of regulating the motion of	Extension.
	Schindler, Carl W.		
	Scholfield, Nathan		



7630	Schreiner, Henry—see John Marquart, Jr.	Smiths' strikers.....	II.
7419	Scott, George—see Culbertson & Scott.	Horses, flying.....	XX.
7535	Scott, Melchi.....	Hubs with axles, connecting.....	X.
7224	Scripture, Eliphalet S.....	Dental and surgical chairs.....	XX.
7386	Searle, Flavius.....	Attachments to mills for preparing corn in the cob for grinding.....	XIII.
7498	Seely, John M. and Wm. E. Tomlinson.....		
7295	Seibert, Peter—see Cresson, Stuart & Seibert.		
7328	Seibert, Peter—see Peterson, Stuart & Seibert.	Locomotive engines for working heavy grades, boilers and gearing of.....	VI.
7658	Sellers, George Escol.....	Presses, cheese.....	XII.
7075	Severance, Augustus N.....	Press boxes or vats for cheese.....	XII.
7295	Severance, Augustus N.....	Wheels, cast iron railroad car.....	X.
7549	Seversson, Benjamin.....	Water metres.....	XI.
7860	Seversson, Benjamin.....		
7633	Sewell, William, Jr.....	Rail, compound tubular.....	IX.
7636	Sexton, S. B. & Co.—see James H. Conklin.	Turning machines.....	XIV.
7607	Seymour, Alfred B.....	Portfolios.....	XVIII.
258	Shaw, E. M.....	Bedsteads, camp.....	XVII.
7445	Shaw, James.....	Scribing lumber, machines for.....	XIV.
7550	Shaw, William C. and James Stalcup.....	Stoves, cooking, arrangement of dampers in.....	V.
7634	Shellenberger, John.....	Stoves.....	Design.
7789	Shepard, Henry L.....	Feed apparatus for mills.....	XIII.
7387	Shepard, Henry L.....	Churn dashers.....	I.
7831	Sherlock, John and Wm. Brackbill.....	Cylinders, steam, exhaust passages for.....	VI.
259	Sherman, Robert S.....		
7176	Shield, George.....	Tables, extension.....	XVII.
6992	Shipton, Thomas N.—see Signer & Shipton.	Looms, power.....	III.
7007	Shoenberger, Edwin F.....	Planters, seed.....	I.
7747	Shuttleworth, John.....	Stoves.....	Design.
7499	Signer, John and Thomas N. Shipton.....		
7748	Simmons, Peter J.....	Lock bolts, method of operating.....	IX.
7801	Sipe, Joseph—see Howells & Sipe.	Cordage, cotton, machinery for making.....	III.
7446	Slaight, Thomas, ass'or to Henry C. Jones.....	Cordage, cotton, machinery for making.....	III.
7825	Slaughter, Franklin and David Perry.....	Musical instruments, reed.....	XVIII.
	Slaughter, Franklin and David Perry.....	Screws, machines for cutting.....	II.
	Sleeper, James P.....	Screws, wood, machines for nicking the heads of.....	II.
	Sloan, Thomas J.....	Screw threading machine.....	II.
	Sloan, Thomas J.....	Parti-coloring yarn, apparatus for.....	IV.
	Sloan, Thomas J.....	Carpets, manufacture of two and three ply.....	III.
	Smith, Alexander.....		
	Smith, Alexander.....		



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7310	Smith, Asa—see Percival & Smith.	Propellers and chimneys for canal boats, arrangement of.	XIII.
7296	Smith, Benjamin M.	Sewing machines	III.
94	Smith, David M., ass'or to Thomas Chadbourne.	Stearine from elaine, process of preparing.	Additional Imprv't
	Smith, John H.		
	Smith, Josiah M.—see Pecare & Smith.		
7090	Smith, Leonard.	Smut machines.	XIII.
339	Smith, Morris & Benona S. Gleason	Stoves.	Design.
7420	Smith, Samuel B.	Electro magnetic machines for shocks	VIII.
7689	Smith, William W.	Callipers	VIII.
7690	Snead, Charles S.	Dryers, grain	V.
7091	Snedaker, Samuel B.	Fasteners and window shutter openers, method of bolting in	II.
7722	Snow, George K.	Paper, machines for folding	XVIII.
7430	Snyder, Elisha S.	Thrashing machines.	I.
7826	Sommers, Henry B.	Vessels, apparatus, attached to for indicating the depth of water.	VII.
7708	Southward, Eli F.	Grummet strap	VII.
7827	Southworth, Daniel H.	Planing machines.	XIV.
171	Spafford, George, ass'or to John Campbell	Paper, machine for boiling and washing rags for manufacturing.	Re-issue.
7551	Spencer, Robert	Saddles, harness	XVI.
7635	Spencer, Smith	Mortising machines	XIV.
7723	Sprague, John A.	Excavating and conveying earth.	IX.
7008	Spratt, James.	Alloys for points of lightning rods	IV.
7076	Spratt, James	Lightning conductors, attachments for	VIII.
7536	Spring, Charles A. and Peter Boon	Planing machines, arrangement of pressure and feed rollers in.	XIV.
7637	Stadden, Robert.	Hullers, clover	I.
7447	Stafford, J. R.	Mills for grinding	XIII.
7735	Stagg, Thomas G.	Beefsteak, preparing for cooking	XVII.
	Stalcup, James—see Shaw & Stalcup.		
	Stanley, James—see L. E. Hicks.		
6993	Stark, Lewis	Branding tools.	XIV.
7276	Starkey, David G.	Oil cans	XIII.



7746	Starks, Nathan	Wheels, car, machines for making wrought iron.	X.
7766	Starkweather, George	Curing meat, process for.	IV.
7724	Stebbins, Erastus	Molasses gates.	XI.
7814	Steele, Elisha	Buckles, suspender.	XXI.
7431	Stevens, James	Traps, arrangement of mirrors in.	XXII.
7802	Stevens, Joshua	Locking apparatus, the of repeating fire arms.	XIX.
7388	Stevens, Silas, assignor to George Forbes.	Knives, spiral, machine for grinding.	II
7484	Stevens, Thomas—see Dalton & Stevens.	Lamps, safety tubes for.	V.
7484	Stewart, Franklin.	Daguerreotype pictures, cases for.	XVIII.
7041	Stewart, Richard S.—see Moses Chase.	Straw cutters, feeding apparatus of.	I.
7514	Stiles, Ann F.	Ranges, cooking.	V.
7151	Stiles, David, Jr.	Ranges, cooking, water backs for.	V.
7401	Stimpson, Frederick H.	Tailors' measures.	XXI.
7402	Stimpson, Herbert H. and Frederick H.	Tailors' measures.	Additional imp'mt.
95	Stocker, Amos.	Legs, artificial.	XX.
7847	Stocker, Amos.	Clevises, plough.	I.
7338	Stone, W. C.	Tubes of sheet metal, machines for forming.	II.
7537	Stoner, John B.	Stoves, Franklin, blowers of.	V.
7608	Stout, Joseph and James T. Stanton.	Fences.	IX.
7108	Stuart, David, assignor to William P. Cresson.	Melodeon.	XVIII.
7352	Stuart, David—see Cresson, Stuart and Seibert.	Stoves.	V.
7127	Stuart, David—see Peterson, Stuart and Seibert.	Scrapers, removable teeth for.	IX.
7252	Subers, Isaiah.	Spark arresters.	VI.
7790	Swan, Amos L.	Dye woods and dye stuffs, machine for cutting and shaving.	Extension.
7749	Swan, Nathan—see Ferris & Swan.	Friction matches.	Extension.
7128	Sweeney, Peter.	Spike machines.	II.
7624	Sweet, Joseph.	Hydrolator.	XI.
7403	Sweet, Samuel.	Pipe, lead, manufacture of.	XI.
7030	Swift, Beriah.	Pile for rugs, &c., preparation of.	III.
7570	Swift, Erdix T., administrator of Alonzo D. Phillips.	Harness hames, fastenings for.	XVI.
7815	Swift, Horatio N.	Safety apparatus for steam boilers.	VI.
7353	Swope, Zuriel.	Auger handle.	XIV.
7389	Tatham, William P.	Valves; oscillating, of steam engines.	VI.
7403	Taylor, Alfred—see Condit & Taylor.	Saw mills, apparatus for setting logs in.	XIV.
7030	Taylor, James, assignor to John, Joseph and Francis Cross- ley.		
7570	Taylor, Timothy, assignor to Mortimer Taylor.		
7815	Tennent, John C. and John Workman.		
7353	Thatcher, George H.—see Reuben J. Blanchard.		
7389	Thayer, Augustus.		
	Theaker, Thomas C.		
	Theaker, Thomas C.		



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7623	Thimmonier, Barthelemy; Sr., assignor to Philip May.	Sewing machines.....	III.
7500	Thomas, Evan O.....	Store counters.....	XXII.
7861	Thomas, Samuel T. and Edward Everett.....	Looms for weaving figured fabrics.....	III.
7092	Thomas, William S.....	Telegraphs, electric.....	VIII.
7311	Thompson, Henry G.....	Lathe for turning a peculiar species of curve.....	II.
7848	Thompson, Robert.....	Lamps for lighting gas burners.....	V.
	Thorpe, Phillip—see Buffum A.		
7464	Timby, T. R.....	Water wheels for increasing or diminishing their diameters.....	XI.
7585	Tingle, George.....	Paddle wheels, opening and closing bucket for.....	VII.
7201	Tingley, Albert H., assignor to E. W., H. F. and A. H. Tingley.....	Marble, machines for sawing.....	XV.
7625	Tomlinson, Seymoar.....	Horses, apparatus for breaking.....	XXII.
	Tomlinson, W. E.—see Seely & Tomlinson.		
7623	Towne, John H., assignor to S. V. Merrick.....	Hammer, direct action steam.....	II.
7691	Townsend, Ashley.....	Thrashing machines and grain cleaners, endless aprons for.....	I.
7277	Townsend, Benjamin M.....	Hay, machines for raking and loading.....	I.
	Totten, Joseph M.....	Friction rollers.....	X.
7560	Tozer, Junius F.....	Vaccinating, instruments for.....	XX.
7371	Trees, James.....	Propeller, shell.....	VII.
7329	Trissler, W. H. and Elias Brecht.....	Coffee roasting.....	XVII.
7816	Trotter, Jonathan T.....	India rubber, vulcanizing.....	IV.
7515	Truscott, Samuel.....	Car wheels, apparatus for regulating the contraction of.....	II.
7253	Tucker, Hiram.....	Mantel piece.....	IX.
7061	Turnbull, James, Jr., and Jno.....	Looms, for piled fabrics.....	III.
315	Tuttle, Charles T. and James S. Bailey.....	Register and ventilator, plates for.....	Design.
316	Tuttle, Charles T. and James S. Bailey.....	Register and ventilator, plates for.....	Design.
317	Tuttle, Charles T. and James S. Bailey.....	Register and ventilator, plates for.....	Design.
318	Tuttle, Charles T. and James S. Bailey.....	Register and ventilator, plates for.....	Design.
319	Tuttle, Charles T. and James S. Bailey.....	Register and ventilator, plates for.....	Design.
320	Tuttle, Charles T. and James S. Bailey.....	Register and ventilator, plates for.....	Design.
7312	Ulam, David.....	Smut machines.....	XIII.
7093	Ulmann, Solomon B.....	Castors for furniture.....	XVII.



7465	Underwood, John	Presses, cheese, self-acting	XII.
7466	Upfield, William	Boot-trees	XVI.
7330	Van Anden, William	Chairs, machine for making wrought iron railroad	IX.
7586	Van Brocklin, John	Bolts, rivets, etc., machine for heading	II.
7094	Vanderhoof, George	Trucks, connecting with car bodies	X.
7331	Van Der Veer, Benj. M.	Rules, board and log	VIII.
	Van Wagoner, Cornelius S.—see William Kennish		
	Viall, Daniel H.—see Grant & Viall		
7552	Vine, William and James H. Ashmead	Gold, machines for beating	II.
7553	Vogel, Kasimir	Harness, weavers', machinery for dressing	III.
263	Vose, Samuel D.	Stoves	Design.
264	Vose, Samuel D.	Stoves	Design.
265	Vose, Samuel D.	Stoves	Design.
7761	Vrooman, Henry S.	Emery wheels, clamps for girding	XXII.
277	Wager, James	Stoves	Design.
293	Wager, James, David Pratt and Volney Richmond	Stoves	Design.
7226	Wales, Gideon	Tobacco, method of dressing cut	XXII.
7109	Wakefield, Charles A.	Planting barrows, seed	I.
7110	Wakefield, Charles A.	Planters, seed	I.
7862	Walker, Joseph N.	Mills for grinding	XIII.
	Walker, Robert—see Welch & Walker		
7554	Walker, William and Matthew C.	Churn dashers	I.
7354	Walter, Amos	Stone, machine for polishing	XV.
	Ward, Gilbert S.—see Daniel W. Goble		
7538	Ward, William E.	Bolt and rivet machine	II.
	Warfield, Henry—see Goddard & Warfield		
7863	Waring, George E.	Furnaces, hot air	V.
	Warner, A. B.—see Jas. G. Davis		
7332	Warner, Chapman	Pipe coupling	XI.
7372	Warner, James N.	Stove pipes, joints of	V.
7762	Warner, Ezra J.	Hooks and eyes, fastening upon cards	XXI.
7709	Warner, Orra and Charles J. Gaylord	Grapple spring	XXII.
	Warner, R. F.—see Archer & Warner		
276	Warnick, Charles W., F. Leibrandt, J. G. Abbott and A. Lawrence	Furnace, portable	Design.
312	Warnick, Charles W.	Stoves	Design.
7404	Warren, A. G.	Sofa bedsteads	XVII.
7640	Warren, David	Plough cleaner	I.
	Warren, George—see Green & Warren		
	Warren, George—see Green & Warren		
7539	Warren, Thos. E.	Car seat backs	X.
7710	Washburn, Nathan	Wheels, cast iron car	X.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7129	Waterman, Nathaniel.	Coffee, apparatus for making.	XVII.
7467	Watkins, Miles S.	Carriages.	X.
7725	Watson, William.	Harvester, maize.	I.
7062	Webb, Joseph W., assignor to Benjamin Gould.	Mills for grinding.	XIII.
7711	Webb, Joseph W., assignor to Benjamin Gould.	Straw cutters, adjustment of knives in.	I.
7112	Webster, John G., assignor to John W. Robertson and John G. Webster.	Cloth, measuring on looms.	III.
	Webster, William—see Ostrander & Webster.		
	Weeks, Ebenezer—see Crafts & Weeks.		
7405	Weidman, John.	Fanning mills.	I.
7031	Weikart, Andrew.	Boring machines.	XIV.
7009	Welch, Augustus and Robert Walker.	Shingles, machinery for dressing.	XIV.
7626	Welch, Benjamin.	Splints, surgeons'.	XX.
7177	Welch, William T., Jr.	Brakes for carriages.	X.
7042	Welsh, George.	Shutters, window, chain and flange apparatus for opening and closing.	II.
		Door spring.	II.
7692	Wescott, Amos.	Umbrella sticks, &c., machinery for turning.	XIV.
7095	West, Solomon and Hiram Plumb.	Telegraphs, electro-chemical.	VIII.
7406	Westbrook, C. and Henry J. Rogers.		
	Weston, Adan—see Chase, Weston & Babbit.		
	Wheeler, Russel—see Bailey & Wheeler.		
7130	Whipple, Cullen, ass'or to Jesse Carpenter.	Yarn, machinery for spinning and making rope.	III.
165	Whipple, Cullen, ass'or to Alexander Hodges, agent of the New England Screw Company.		
7458	Whipple, John A. and William B. Jones.	Screws, wood, machine for cutting the threads of.	Re-issue.
7390	White, J. D.	Photographic pictures, producing upon transparent media.	XVIII.
7555	White, James.	Lathes for turning.	XIV.
7828	White, Jesse and Jonathan Bundy.	Stoves, cooking.	V.
7829	White, Nelson D.	Flour, elevating, cooling and conveying.	XIII.
7043	White, Stephen.	Pill boxes, machines for making.	XIV.
7540	Whitehead, Jesse.	Gases, preparing illuminating.	IV.
7152	Whiteley, Edward.	Speeder, counter twist.	III.
		Chimney caps.	V.



7202	Whitney, Asa.....	Wheels, cast iron car.....	X.
7313	Whitman, Shephard.....	Brick presses.....	XV.
7712	Whitmarsh, Samuel.....	Bedsteads and sacking bottom, portable.....	XVII.
7314	Whiton, E. F.....	Cloth, instruments for measuring.....	III.
7736	Whittemore, Thomas J.—see Dexter H. Chamberlain.		
7227	Whittlesey, Austin and Austin K.....	Coulters to ploughs, fastenings of.....	I.
7278	Wicks, Edward.....	Planter, seed, the seed roller of a.....	I.
7803	Wilder, Mark.....	Gudgeons, wing.....	XIII.
7203	Willecox, Thomas T.....	Looms, shuttle motions in.....	III.
7178	Williams, David R.....	Blind slat operator.....	II.
7044	Williams, Edwin and James Culbertson.....	Rifles, machine for giving increased twist in cutting.....	XIX.
7763	Willis, William B.....	Planters, seed.....	I.
7864	Willis, Wm. B.—see Reed & Willis.		
7776	Wilmot, Samuel R.....	Fly brushes.....	XVII.
167	Wilmot, Samuel R.....	Weighing grain, machines for.....	XII.
7587	Wilson, Allen B.....	Sewing machines.....	III.
7254	Wilson, Ebenezer.....	Lard and tallow, machines for rendering.....	Re-issue.
7045	Winslow, J. A.....	Vessels, method of carrying over shoals.....	VII.
7556	Winslow, Seth E.....	Sash-stopper, spring, inclined plane and roller.....	II.
7541	Wisell, Eli K.....	Chucks for boring and mortising machines.....	XIV.
7315	Wisell, Eli K.....	Tenon bits.....	XIV.
7432	Wode, George.....	Bureau drawers, fastenings for.....	XVII.
7111	Wolf, David.....	Plough, corn, adjustable shares of.....	I.
7448	Woodbury, James A.....	Planes for tonguing and grooving boards, &c.....	XIV.
7804	Wood, Hamilton.....	Burning ornamental figures upon wood.....	XVIII.
7805	Wood, John A.—see Adams & Wood.		
7010	Wood, John F.....	Scraper, combination of a guide tooth with an inclined.....	IX.
7713	Wood, Loftis.....	Boiler, cupola and grate combined.....	V.
7693	Wood, Loftis.....	Stoves, cooking.....	V.
7407	Wood, William.....	Shingles, machines for cutting.....	XIV.
7333	Woodside, Peter G.....	Registers, warm air.....	V.
7675	Woodward, Isaac.....	Straw cutter.....	I.
7011	Woolson, Amasa.....	Cloth, machines for shearing.....	III.
7334	Workman, John—see Tennent & Workman.		
7737	Wright, Franklin.....	Sinut machines, the rubbers of.....	XIII.
7153	Wright, George.....	Caps, percussion, machine for forming and charging.....	XIX.
7316	Wright, Oliver.....	Irregular forms, mills for sawing.....	XIV.
	Würfflein, John.....	Gun, percussion, method of preventing accidental discharge in the.....	
	Wurtz, Jacob H.....	Alum, processes for manufacturing.....	XIX.
	Wyeth, Nathaniel J.....	Ice, scraper for removing snow from.....	IV.
	Yates, Peter.....	Reciprocating motion, a, changing into a rotary motion.....	XXII.
			XIII.



## ALPHABETICAL LIST—CONTINUED.

NUMBER.	PATENTEES.	INVENTIONS OR DISCOVERIES.	CLASS.
7468 .....	Yaw, Hiram and Thomas P. How.....	Waste gates.....	.....XI.
7204 .....	Yerger, George W.....	Legs, artificial.....	.....XX.
7588 .....	Young, James.....	Stannates of potash or soda, processes for making.....	.....IV.
7046 .....	Young, John.....	Churns, atmospheric.....	.....I.
7791 .....	Zaiser, Wilhelm.....	Bedsteads.....	.....XVII.



## II.

## INVENTIONS AND CLAIMS

FOR THE YEAR 1850.

No. 6981.—*Improvement in Pen and Pencil Cases.*

Having thus described my invention, I claim the auxiliary interior tube C, in combination with the two outside tubes A and B, in the manner substantially as herein described, and for the purpose set forth.

ALBERT G. BAGLEY.

No. 6982.—*Improvement in combining Grinding and Bolting Machines.*

What I claim as my invention, and desire to secure by letters patent, is the combination of an adjustable grinding mill, with an adjustable bolting machine, both worked on one shaft, and adapted to each other, so that both or either can be adjusted independent of the other, substantially in the manner and for the purposes above made known.

JAMES M. CLARK.

No. 6983.—*Improvement in Instruments for Paring Horses' Hoofs.*

Having thus described the manner of constructing and using our combined gripe and lever knife for paring the feet of horses for shoeing, what we claim as our invention and desire to secure by letters patent, is the combination of the gripe (A,) arm (E,) and knife (D,) whether made with or without the adjustive plates (G,) and joint pin (B,) or in any way, substantially the same and of any suitable size and material.

ASHLEY CRAFTS.

EBENEZER WEEKS.

No. 6984.—*Improvement in Hemp Brakes.*

What we claim as our invention and desire to secure by letters patent, is the combination of the revolving rollers, with the swords or beaters arranged and operating substantially in the manner herein described.

JONATHAN CRANE.

F. H. HAMILTON.

No. 6985.—*Improvement in Coal Grates.*

What I claim as my invention, and desire to secure by letters patent, is the formation of a revolving cylinder grate, by placing circular grate bars or flanges around a hollow cylinder, a draft of cold air being passed through the said hollow cylinder for the purpose of cooling the same, at the same time making it answer the purpose of a hot air chamber substantially as above described.

CHAUNCEY O. GREENE.



No. 6986.—*Improvements in operating Shuttle Boxes in Looms.*

Having thus described our improvements in looms, what we claim therein as new and desire to secure by letters patent is, shifting a series of shuttle boxes substantially as herein set forth by means of a corresponding series of cams, acting through levers, cords or other means, severally brought into action at the required intervals by the pattern wheel face, cam and spring, or other equivalent devices, the whole arranged and operated substantially as described.

ROBERT BURNS GOODYEAR.  
BENJAMIN HURST.

No. 6987.—*Improvements in Hemp Scutchers.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the circular back or head, with the inclined knives or scrapers, and the hub and rest, substantially as is herein mentioned.

F. H. HAMILTON.  
THOMAS BULLOCK.

No. 6988.—*Improvement in Connections of Brakes with Cars.*

What we claim as our invention is the enclosure of said link or pin in a tube, coating or lining of India Rubber or other elastic substance, and securing said rubber in a box or casing so as to confine the same permanently in such way as to allow the action of the brake or other machinery, without wear or friction, rattling or noise.

JOHN KIMBALL.  
HARVEY RICE.

No. 6989.—*Improvement in Washing Machines.*

What I claim as my invention and desire to secure by letters patent, is the combination of a bed of rollers moving at different velocities with a compressor for the purpose of washing, rinsing, and wringing clothes; substantially as herein set forth.

RANSOM MAREAN.

No. 6990.—*Improved Blind and Shutter mover and fastener.*

Having thus fully, clearly, and exactly described the nature and operation of my invention in window blind fasteners; what I claim therein as new and desire to secure by letters patent is, the combination of the finger (e,) and wheels (h) and (l,) with the gravitating catch (j,) its recess (p,) and spring (p<sup>1</sup>,) and hook (n,) for moving, fastening, and unfastening the blind.

WILLIAM MAGUIRE.

No. 6991.—*Improvements in the Wheel and Axle Stump Extractor.*

What I claim as my invention, is the arrangement and combination of the axle or journals of the wheels and the axle or journals of the windlass barrel of a stump extracting machine, substantially in the manner, and with respect to the bed frame and other parts of the machine, as herein before specified and exhibited in the accompanying drawings, the same being for the purpose essentially as above set forth.

JOHN ROGERS.



No. 6992.—*Improvement in Machinery for making Cotton Cordage.*

Having thus fully described our improved machine for making cords or ropes, directly from cotton or other slivers, what we claim therein as our invention, and desire to secure by letters patent, is first, the improved form of the nipper heads E, (shown in figs. 4 and 7,) when the nippers (e,) are combined therewith, by means of the steadying pins q q. projecting from the inner edge of the nippers into guiding holes v, in the nipper heads, and by suitable actuating springs b, b, or their equivalents, substantially as represented and described; by means of which the nippers are prevented from becoming clogged and obstructed in their movements, and from pressing against the slivers, by the accumulation of trashy matter about them.

2nd. In combination with the planetary motion of the series of flyers that receive and twist the cotton slivers, and lay the threads formed thereby into a cord or rope as described, we claim the independently moving and self adjusting compressing forming block c, for giving a round and perfect form to the cord, or rope, (after its component threads have been laid together,) substantially in the manner herein set forth.

FRANKLIN SLAUGHTER.  
DAVID PERRY.

No. 6993.—*Improvement in Branding Tools.*

I claim as my invention and desire to secure by letters patent, the combination of the inner with the outer shell, substantially in the manner described, as applied to the branding tool.

LEWIS STARK.

No. 6994.—*Improvement in Printers' Type Cases.*

I confine my claim to grooving the bottoms of type cases for the reception of the lower edges of the partitions and to securing these in them by glue, in the manner herein set forth, or of modes substantially the same.

JOHN BELL.

No. 6995.—*Improvements in Engines operated by Steam and Water.*

What I claim as my invention and desire to secure by letters patent, is the manner of combining steam, and air for the purpose of giving motive power to the wheel B, consisting in a jet of the former being thrown from the nozzle E, of the pipe C, into the pipe F, simultaneously introducing therein a quantity of the latter, which together are discharged through the lower orifice of said pipe F, into the buckets of the wheel, and displacing the water therein, causing said wheel to revolve, *in combination with* the pipe G, through which the hot air is drawn from the top of the box, or reservoir into the pipe F, and re-introduced with the steam into the box at its bottom, thus using it repeatedly over again. The apparatus, by means of which the above is accomplished, is constructed and arranged substantially in the manner described in the foregoing specification.

JAMES BLACK.

No. 6996.—*Improvement in Grain Drills.*

What I claim as new and of my invention, and desire to secure by letters patent is:

First. The rollers *a*, which rollers serve to clear the teeth from rubbish and govern the depth of the teeth.



Second. The spring  $z$ , in combination with the sheaves and teeth, by which arrangement the whole or a part of the teeth can be held by a spring of the same power, and range of movement that it would require for a single tooth.

Third. The moveable bar  $u'$ , to which the team is attached, in combination with the mode of hanging the teeth by means of sheaves or other similar device, by which arrangement the teeth will pass over obstructions in which the action of the team in hauling the drill or cultivator will bring the teeth forward to their proper places as soon as they pass over the obstructions.

And Fourth. The feeding band, substantially in the manner and for the purpose set forth

WILLIAM BULLOCK.

No. 6997.—*Improvement in Cultivators.*

We do not claim to be the original inventors of any of the individual parts of this wheeled, rotary cylindrical cultivator, but what we do claim is the combination of the levers D, rollers A, and driving wheel G, in the manner and for the purpose set forth.

ASHLEY CRAFTS.  
EBENEZER WEEKS.

No. 6998.—*Improvement in Cotton Gins.*

I claim the back ribs F, in combination with the front ribs E, they (THE BACK RIBS) being constructed with a horn or projection  $h$ , each, behind which they curve downwards, to allow the saws to pass twice between the ribs, to remove the motes, and other impurities, in the manner substantially as described.

JOHN DU BOIS.

No. 6999.—*Improvement in Car Wheels.*

What I claim as my invention and desire to secure by letters patent, in rail-road car wheels, is the combination of the rods which connect the hub and rim with the plate or plates, which also unite the hub and rim, substantially as herein described, whereby the plate or plates, are protected against fracture from any sudden jar, and the hub prevented from being separated from the rim should the plate or plates break, as herein described.

GEORGE W. EDDY.

No. 7000.—*Improvement in Smut Machines.*

What I claim as my invention and desire to secure by letters patent, is constructing the shoe, (having the perforated plate for separating large extraneous matter from the grain) with a screen  $D^2$  for separating the cockle and cheat from the grain, and an imperforated plate  $D^3$  and spout for conducting the same to the outside of the machine as described.

JOS. G. GOSHEN.

No. 7001.—*Improvement in Curing Tobacco Stems.*

What I claim as my invention and desire to secure by letters patent, is the process of curing stem or other parts of tobacco with charcoal, by combining or mixing the two together, substantially in the manner and for the purpose herein set forth.

THOMAS HOYT.



No. 7002.—*Improved Ore Washer.*

What I claim as my invention, and desire to secure by letters patent, is separating substances differing in specific gravity, or washing metallic ores, by means of oblique currents of water, and a horizontal one passing over the same in a reverse direction, substantially in the manner herein described. The oblique currents being produced by inclined surfaces or their equivalents.

WM. M. HUGHES.

No. 7003.—*Method of counterbalancing Sash by means of a heavy weight.*

What I claim therein as new and desire to secure by letters patent, is counterbalancing the sash, (and consequently enabling it to be suspended at any desired point) by means of metallic racks within the window frame, these racks being operated by pinions rotating on fixed shafts within the window frame, and these pinions being driven by other racks attached to the sides of the sashes throughout their entire length, the whole being constructed and arranged in the manner, and for the purpose set forth.

WILLIAM MAGUIRE.

No. 7004.—*Improvement in connecting cutters to shafts of boring instruments.*

What I do claim as new and for which I desire to secure letters patent, is the fastening, by which the knives (*k* & *m*) are affixed to the mandrel, being a keyed ring, to sustain the shank of the knives firmly, in adjusting slots in the mandrel, substantially as above described.

LEWIS W. MILLER.

No. 7005.—*Improvement in Coating Iron with Copper or its alloy.*

What I claim as my invention or discovery, and desire to secure by letters patent, is—

First. The before described process of coating and impregnating iron in all useful shapes and forms, with copper or any alloy of which copper forms a part, the said process consisting of cleansing with sulphuric acid, defending the cleansed surface with a coating of clay or other aluminous earth—drying the same, and then plunging the article thus coated into melted copper, or some alloy of that metal.

Second. I also claim the use of the clay paste to protect the metal from oxidating during the process of alloying or coating the metal plates, or pieces of iron, as set forth herein.

E. G. POMEROY.

No. 7006.—*Improvement in Churns.*

What I claim therein as my invention, and desire to secure by letters patent, is the placing the inner surfaces of the series of outer blades *a, a*, in positions tangential, or nearly so, to their circle of rotation, when they are combined with the inclined inner series of blades *b b*, substantially in the manner and for the purpose as herein set forth. Not intending, however, to limit myself to the exact number, proportions, positions, and arrangement of the dasher blades, as herein described and represented, but shall vary them to suit the different sizes of churns required for operating upon milk, and for operating upon cream, whilst I attain the same results by means substantially the same as those herein particularly set forth.

Z. C. ROBBINS.



No. 7007.—*Improvements in Machinery for making Cotton Cordage.*

What we claim as our invention, and desire to secure by letters patent, is the constructing the nipper springs of parallel bars  $n\ n$ , (one or both of which may be made elastic,) having series of holes (or slots) formed in them for the reception of the connecting, and adjusting screw bolts  $s\ s'$ , for the purpose of enabling us to cause the several nippers to press with the same amount of power and elasticity, upon the slivers during their passage through the nipper heads; and also to vary the elasticity of the springs as circumstances may require, substantially as herein set forth.

F. SLAUGHTER.  
DAVID PERRY.

No. 7008.—*Improvement in Alloys for Points of Lightning Rods.*

What I claim and desire to secure by letters patent as my invention, is the formation of an alloy, composed of English block tin, oxide of tin, antimony, bismuth, refined silver, platinum, and silex, in proportions as shown in the above specification, and for the purposes of being manufactured into lightning rod points.

JAMES SPRATT.

No. 7009.—*Improvement in Machinery for Dressing Shingles.*

What we claim therein as new, and desire to secure by letters patent, is the combination of two planes, ( $c\ c$ ,) guided and moving to and fro in the straight converging grooves ( $b$ ) with the spring-plates ( $j\ j$ ,) in front of the plane-irons for holding the slab, and those ( $k\ k$ ,) behind the plane-irons for discharging the finished shingle from the machine, the whole being arranged and operating as herein set forth.

AUGUSTUS WELCH.  
ROBERT WALKER.

No. 7010.—*Improvement in Machines for Cutting Shingles.*

What I claim as my invention, and desire to secure by letters patent, is the mode of moving the carriage  $G$ , sideways, and forcing the same toward the knife, alternately, by means of the cams ( $k\ k'$ ) moving over the grooved shaft  $B$ , by means of the bar  $I$ , and groove ( $l$ ) operating on the curved bars  $H$ , cams ( $m\ m'$ ) inclined bars ( $k$ ,) bolts  $J$ , arranged in the tubes ( $s$ ,) and pressed against the notches ( $t$ ) of the slotted bars ( $o$ ) by the spiral springs ( $u$ ,) spring  $L$ , the whole arranged and operated, substantially in the manner and for the purpose herein set forth.

WILLIAM WOOD.

No. 7011.—*Improvements in Mills for sawing Irregular Forms.*

I claim the mode of raising, and lowering the table or platform  $G$ , on the segmental plates or bars  $H$ , for adapting the same to any thickness of timber to be cut, and keeping the middle of the timber between its top and bottom, always in a line with the centre, of which the segmental plates or bars  $H$ , form arcs of circles, through which (the centre) the saw passes, to prevent it from bending in the timber when sawing a curvilinear surface, by means of the ribs ( $h$ ) having slots ( $i$ ) near their ends, through which the screws ( $10$ ) which enter the segmental plates or bars  $H$  pass, in the manner herein described.

OLIVER WRIGHT.



No. 7012.—*Improvement in Mowing Machines.*

Having thus explained my invention, I claim the master wheel *A*, constructed with cogs on its face, in combination with the rocking shaft *R*, constructed with two knobs or projections *N*<sup>1</sup>, *N*<sup>2</sup>, on it, to give a rocking motion to the said shaft, in the manner substantially as described.

HOMER ADKINS.

No. 7013.—*Improvements in Gates for Fences.*

What I claim as my invention, and desire to secure by letters patent, is the method of balancing and adjusting gates by the panel of fence secured to the gate posts, substantially as herein set forth.

JESSE BAILEY.

No. 7014.—*Improvement in folding Bedsteads.*

What I claim as my invention, and desire to have secured to me by letters patent, is arranging said centre joint with the centre rivet below the other two, in combination with the curving of the adjacent edges of the parts of the side bars, so as to rest upon said centre rivet as described; and also the forming of the inner connecting bar with lateral projections, or shoulders, which when the bedstead is open, shall rest on the top of the two cross bars of the bedstead adjacent to the joint in the side bars of the same, all as herein above set forth.

JOHN BENDER.

No. 7015.—*Improvement in Dampers for cleaning Stove Pipes and regulating the draft in the same.*

What I claim as my invention, and desire to secure by letters patent, is the scraper (*F*,) with the rods attached in such manner that it may be used for the purpose of cleaning the stove pipe, and also to act as a damper, as set forth in the above specification.

FREDERICK BLEIER.

No. 7016.—*Improvement in Mills for Grinding.*

I claim the employment of a sliding adjustable tube, within, and in combination with the brush of the stationary stone, and the spindle, for the purpose and in the manner, substantially as described.

CHARLES W. BROWN.

No. 7017.—*Improvement in Brick Presses.*

Having thus fully shown the construction and operation of my improvement, what I claim as new and desire to secure by letters patent, is—

First. The arrangement of levers *B* and *C*, by which arrangement the bearing of *C*, is near the fulcrum of *B*, thereby giving the operator power to start the brick out of the mould, and by which arrangement the motion of the piston is increased by the bearing of *C* on *B*.

CHARLES CARNELL.

No. 7018.—*Improvement in Files for keeping Papers.*

Having thus fully described as my invention, what I claim therein as new, and desire to secure by letters patent, is the top (*a*, *b*,) consisting of a stationary part for about half its length, and a lid hinged thereto for the remainder, in conjunction with the end lid (*g*,) and one or more side openings (*f*,)



substantially after the manner, and for the purposes described—namely, that of combining with sufficient facility of reference, the greatest attainable dispatch, in the abstraction, and insertion of papers, and moreover constituting when closed, a secure and portable paper holder.

EDWIN D. DODD.

No. 7019.—*Improvement in Obstetrical Supporters.*

Having described the construction and use of our improved spine abdominal obstetrical supporter, what we claim therein as new and for which we solicit letters patent, is—

First. The combination of the back supporter A, feet straps E, E, and adjustable shoulder braces C, constructed as described, with the back pad B, by which the female is enabled to apply the necessary pressure to the back, by the simultaneous or alternate action of the shoulders and feet on the straps connected with the back pad, for relieving the labor and irritation of parturition, without the assistance of any other person, as herein fully set forth.

WM. W. FINCH.

JACOB BLAISDELL.

LEANDER BABBITT.

No. 7020.—*Improvement in Harvesting Machines.*

What I claim in the foregoing as my invention, and desire to secure by letters patent, is the method of cleansing the cutters by giving them at suitable intervals a larger vibration than ordinary, substantially in the manner herein set forth—thus detaching the dirt and gum which accumulates upon them.

J. E. HEATH.

No. 7021.—*Substitute for the Clevis.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the crownhead A, and bolt D, with the upright, by which the plough is made to cut any width and depth desired, made substantially as herein described.

JOHN HOWELL.

WILLIAM D. HOWELL.

JOSEPH SIPE.

No. 7022.—*Improvement in Cider Mills.*

What I claim as my invention, and desire to secure by letters patent, is the particular combination of machinery used for the purpose of grinding and pressing fruits, and juicy substances, viz :

First. The cutter drum A, with its teeth *a*, fig. 2, running into teeth *b*, in bed mould B, used to grind the fruit or juicy substance.

Second. The strap C, fig. 1, made of felting, hair cloth, or other porous fabric, used to carry the pomice, or ground substance between the pressing drums D and E, where it is pressed, and to strain the juice thus expressed.

Third. The press drums D and E, used to press the juice from the pomice, or ground substance.

Fourth. The brush L, used to remove the pomice or ground substance, from the strap C, figs. 1 and 2, all of the above being performed by one application of power and continued rotary motion.

SAMUEL JACKSON.



No. 7023.—*Improved arrangement of the Valves of Hydraulic Engines.*

What I claim as my invention, and desire to secure by letters patent, is arranging four register valves upon one spindle, in such a manner with reference to each other, and their seats, so that the pressure upon any one of them shall be counterbalanced by the pressure upon some other of them, substantially in the manner herein described, for the purpose of regulating the induction and eduction to and from hydraulic engines.

WILLIAM KENNITH.

No. 7024.—*Improvement in Machinery for Tonguing and Grooving.*

What I claim as my invention, and desire to secure by letters patent, is the placing the finishing, grooving, and tonguing cutters *c, d*, in the same heads *A, B*, with the primary grooving, and tonguing cutters *a, a, a*, and *b, b, b*, and in reversed positions thereto, when the said cutter heads are connected to operating cranks at one end, and are jointed to working levers *e, e'*, at points between the primary grooving, and tonguing cutters, and the finishers, substantially as above described, for the purpose of giving to the said cutters the movements and action herein set forth.

ROBERT KITTLE.

No. 7025.—*Improvement in Buckles.*

What I claim as my improvement, and desire to secure by letters patent, is the mode of making buckles entire from a single piece of sheet metal as above described; the buckle opening and shutting by means of the spring given to it in the construction thereof, as aforesaid.

GEORGE R. KELSEY.

No. 7026.—*Improved Door Lock.*

Having thus fully, clearly, and exactly described the nature and construction of my combination lock, what I claim therein as new, is—

First. The combination of parts forming the key, constructed substantially as described, and represented, viz: the shaft with its slot (*a*,) the slide (*b*,) with its slots (*c, c'*,) pins (*d*,) rack (*f*,) jaws (*e*,) pinion (*g*,) and bit (*h*,) with its teeth (*i*).

Second. Constructing the knob with a central opening in its face, closed by a spring disc, for the purpose of introducing these through the semicylindrical spindle (*k*,) with its annular shoulder, and a key such as aforeclaimed, the shank of the knob being hollow, for the purpose of receiving the same.

Third. Arranging the bent lever (*h'*,) that lifts the spring tumbler (*e''*,) so that the key must operate this lever before it can be inserted into the notch (*o'*,) of the compound lever and tumbler (*b'*,) for lifting the same, substantially in the manner as described.

Fourth. Constructing the compound lever and tumbler (*b'*,) with the following characteristics, viz: so that its projection (*n''*,) in combination with the spring lever (*e''*,) prevents the bolt (*f*,) being forced back by pressure on its face, when the bolt has been thrown forward; so that its projection (*o''*,) in combination with the projection (*p'*,) on the latch (*p''*,) prevents the retraction of the same when the bolt (*f*,) is thrown forward; and so that its cam (*a''*,) prevents the spring (*z*,) in the spindle from throwing the catch (*y*,) on the other end of the lever (*x*,) into the cavity (*w*,) on the face of the shank of the knob, so long as the bolt (*f*,) is thrown forward; the knob being there-



by permitted to rotate on the spindle when the bolt is thrown forward, and to rotate with the spindle when by the elevation of the compound lever and tumbler, the cam ( $a''$ ,) is carried below the lever ( $x$ ); the compound lever and tumbler ( $b'$ ,) being thus combined with the spring tumbler ( $e''$ ,) the bolt ( $f'$ ,) the latch ( $p''$ ,) the spindle ( $k$ ,) through its lever ( $x$ ,) and the knob ( $n$ ,) substantially in the manner and for the purposes described.

WILLIAM MAGUIRE.

No. 7027.—*Improvement in Circular Saw Mills.*

What I claim as my invention, and desire to secure by letters patent, is the application to circular saw frames of rocker boxes, and a swing frame as herein set forth, and suspending said frame in position, by means of the driving belt as above described, for the free and successful operation of the saw, by the motion before mentioned.

N. G. NORCROSS.

No. 7028.—*Improvements in Spindles and Bobbins for Spinning.*

What I claim as my invention, and desire to secure by letters patent, is making the life spindle or bobbin tube, with two conical shoulders, substantially as described, in combination with the conical supports in which they run, one or both ends being adjustable, substantially as described.

And finally, I claim the method substantially as described of driving the life spindle by means of a warve tube running on a dead spindle, or a step, and embracing the lower end of the spindle, substantially as described.

JOSIAH G. REED.

No. 7029.—*Improvement in Winnowing Machines.*

Having thus described my improved winnowing machine, what I claim therein as new, and desire to secure by letters patent, is the combination of a series of wind passages ( $e$ ,) with a separating chamber ( $D$ ,) or other device for presenting the foul grain to the action of the blast, and a fan ( $C$ ,) for producing the blast, substantially as herein set forth.

ABRAHAM STRAUB.

No. 7030.—*Improvement in Fastenings for Harness Hames.*

What I claim as my invention, and desire to have secured to me by letters patent, is the combination of the hook lever  $C$ , and metallic plate  $A$ , secured to the lower end of one of the hames  $H$ , for tightening or slacking the connecting strap  $D$ , attached to the lower end of the fellow hame  $H$ , and for the purpose herein fully set forth, by which the hames may be connected and disconnected instantaneously, by simply moving the hook lever ( $C$ ,) in the arc of a circle—thus doing away with the troublesome and insecure fastening usually employed to connect the lower ends of hames.

TIMOTHY TAYLOR.

No. 7031.—*Improvement in Boring Machines.*

I do not in this application claim to be the original inventor of an adjustable boring machine, to be affixed to the stationary timber to be bored, as I have heretofore patented such a machine, and as various combinations of mechanical devices to produce such a machine have been made and used, but what I do claim as my original invention and desire to secure by letters patent, is the combination of the jointed hook lever  $N P$ , pawl  $X$ , notched plate  $M$ ,



perforated flanged plate T, crane C, adjustive clamping block E, with the adjustive stock A, for adjusting and confining the bearings of the boring tool to the timber to be bored in any desired position, for boring holes in the timber at any required angle without moving the timber, as described.

A. WEIKHART.

No. 7032.—*Improvement in Trusses for Hernia.*

What I claim as my invention, and desire to secure by letters patent, is the peculiar bend of the elliptical springs, as described in the foregoing specification, so as to cross them in front and make the spring on one side support the opposite side, thereby giving a better pressure with more ease and comfort to the wearer.

WILLIAM R. BATTLE.

No. 7033.—*Candle Mould Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is—  
First. The before described mode of making candles by using the candles previously drawn from the moulds, to hold the wicks for the succeeding candles in the centres of the moulds, until the latter become sufficiently hard to sustain their own wicks as described.

Second. I claim the combination of the frames F, K, recessed candle holders H, I, J,—H', I', J', frames M, M, and spools O<sup>b</sup> containing the continuous wicks N, with the candle moulds D, as described.

Third. I claim the employment of the revolving platform in combination with the hinged moulds, constructed as aforesaid, arranged and operated in the manner and for the purpose herein fully set forth.

Fourth. I also claim the manner of raising the outer end of the spout (Y,) of the vat Q, simultaneously with lowering the gate T, for the purpose of stopping the dripping of the tallow whilst turning the frame of moulds, by combining the spout with the gate by the stirrup roller and lever, as described. I do not however, intend to confine my claim to the precise construction described in the foregoing specification, but to use such a form of construction as may be the best adapted to accomplish the desired object, by means substantially the same. Neither do I claim any portion of the machine above described that has been practised successfully by others, prior to its being invented by myself.

H. CAMP.

No. 7034.—*For an Improvement in Gearing and Ungearing Seeding Apparatus.*

I do not claim the four double lever cog wheels J, or the horizontal level cog wheels F, as my invention, as they have been heretofore used in machinery and are old devices, but what I do claim as my invention and desire to secure by letters patent, are the devices used herein for gearing and ungearing the seeding apparatus, as described.

DAVID EBERLY.

No. 7035.—*Improvement in Bedstead Fastenings.*

My invention consists in giving such forms to the respective portions of the fasteners A, D, that they can be secured to the posts and rails of a bedstead, without making a mortise in either the one or the other, thereby pro-



ducing a saving of labor in the manufacture of bedsteads; and also producing economy in the use of materials by enabling the posts to be made of smaller size than they are required to be when other forms of fasteners are made use of. Having thus fully described my improved bedstead fastener, what I claim therein as my invention, and desire to secure by letters patent, is the giving the portion D, of the fastener that is secured to the ends of a rail a tubular shape, and such a size that the portion thereof that projects from the end of a rail will embrace the fastening plate A, that is secured to the side of a post, when this arrangement is combined with the lugs *c, c*, projecting inwards from the extremity of D, and the notches *e, e*, and inclined planes *b, b*, on the plate A, substantially as herein set forth, by means of which the respective parts A, D, of the bedstead fastener can be secured to the posts and rails of a bedstead without forming a mortise in either the one or the other.

MATTHEW ELDER.

No. 7036.—*Improvement in the Concave of Cornshellers.*

What I claim as my invention, and desire to secure by letters patent, is—

First. I claim, connecting the opposite sides of the concave, substantially as herein described, whereby they may be moved simultaneously towards or from the cylinder, without changing their relative distances from the same.

Second. I claim the combination of the screen or grate with the punches for freeing its meshes from obstructions, substantially as described.

D. HOATS.

No. 7037.—*Improvement in the Gridiron Slide Valve.*

What I claim as my invention, and desire to have secured to me by letters patent, is the peculiar arrangement of the exhaust mortises or spaces *o, o, o*, &c., *p, p, p*, &c., in the sliding valve, *between* and *around* the inducing and educting passages *h, h*, &c., *b, b*, &c., through said valve, in combination with the elongated side slots or passages *g, g*, &c., through the valve seat leading to the exhaust chamber *q, q*, the whole arrangement and operation being substantially as herein above set forth.

WILLIAM W. HUBBARD.

No. 7038.—*Improved Tuyere.*

What I claim as new, and of my invention, and desire to secure by letters patent, is placing within a chamber, having numerous apertures at the top, and a discharge valve at the bottom, an upright pipe open at both ends, in the manner described, whereby a blast of the greatest intensity is delivered at the centre of the fire and the vertical pipe may be readily freed from ashes, cinders, &c.

JOHN PAWLEY.

No. 7039.—*Improvement in Portable Furnaces.*

I claim the mode herein described of constructing my portable furnace, viz: with a diving flue, open at the bottom, so as to adapt it readily for use to the boiler holes of cooking stoves, in the manner above specified.

MERRITT F. POTTER.

No. 7040.—*Improvements in Spark Arresters.*

What we claim as our invention, and desire to secure by letters patent, is—



First. The arranging of a series of chambers and channels between two conically shaped plates, the channels being so formed as to cause the products of combustion to impinge against that side of each of the dirt chambers, which has the openings and caps, and thereby force the sparks, dirt, &c. &c., into them, in the manner described herein.

We also claim the combination of the double conical cap or cover for the formation of the second series of dirt chambers, with the pipe (*p*,) the whole being combined and operating substantially as described herein.

JAMES RADLEY.

JOHN W. HUNTER.

No. 7041.—*Improvement in Cases for Daguerreotype Pictures.*

What I claim as my invention, and desire to secure by letters patent, is the new manufacture of daguerreotype cases, to wit: securing the picture in a glass tube or case provided with a magnifying lens, said tube being blackened on part of its inner surface, and admitting the light through another part, to the plate in the manner herein described.

ANN F. STYLES.

No. 7042.—*Chain and Flange Apparatus for opening and closing Window Shutters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of links, and a centre nut with a stationary curved flange, exterior to the chain to guide the links in such a manner, that they may be operated to turn the centre pulley or nut, either by pushing or pulling, as herein described.

I also claim, in combination with the sliding bar and links herein described, the arm *e*, on the centre nut, and the notch *b*, on the *bar* for locking the shutter and taking the pressure off of the links when the bar is pushed in and the shutter fastened, as described.

G. WELSH.

No. 7043.—*Improvement in Preparing Illuminating Gases.*

I claim the method which I have described of producing hydrogen gas, oxide of carbon gas, and light carburetted hydrogen gas combined, freed, or nearly freed, from the presence of carbonic acid gas, by passing the gas evolved by the decomposition of water, through a mass of materials consisting of charcoal, coke, or anthracite coal, in combination with thin iron plates, or iron wires, or iron turnings heated to a high temperature; such compound gas, produced as aforesaid, being combined with heavy carburetted hydrogen gas, produced by the decomposition of resin, oil, fat, or pit-coal, or such other substances as herein before designated, as described. But I do not claim the modes herein described of decomposing the water.

I claim the use of small chains or other similarly connected pieces of metal, as a means of presenting a large amount of iron surface, for decomposing the resin, tar, oil, or fats, or other such substances herein before designated, such chains or other similarly united pieces of metal being so arranged as to expose the vapors disengaged from the above mentioned substances to a multitude of small divided and heated surfaces.

STEPHEN WHITE.



No. 7044.—*Improvement in Seed Planters*

I do not claim the frame, hopper, stirrer, slide, drills, nor any of the parts heretofore used in seeding machines. I only claim as my invention the employment of the flanged, supporting, conveying, cleaning and covering wheels A, made as described in combination with the rest of the machine, when made in the manner as above set forth, for planting cotton and other seeds, and for other purposes.

WM. B. WILLIS.

No. 7045.—*Improvement in Chucks for Boring and Mortising Machines.*

What I claim in the before described machine for mortising and turning, as my invention and desire to secure by letters patent, is the self-centering chuck, constructed substantially as herein set forth.

ELI K. WISELL.

No. 7046.—*Improvement in Atmospheric Churns.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the inverted vessel (H,) and the disc (i,) on the stem of the dasher to prevent the splashing out of the cream at the churn lid.

JOHN YOUNG.

No. 7047.—*Improvement in the Cotton Press.*

I claim the pulley F, with its axis S, eccentric to its centre, in combination with the stock or follower of the pressure block D, to compress cotton, &c., in the bale box, in the manner substantially as herein represented and described.

A. D. BROWN

No. 7048.—*Improvement in Brick Presses.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the crank K, chain n, and oscillating frame or carriage J, with the stationary bed of rollers c, c, the whole being arranged and operated as herein described, for the purpose of supporting the moulds while being filled and pressed, striking the bricks and then pushing the moulds out of the machine.

JOHN BUTLER.

No. 7049.—*Improvement in Wash Mixtures.*

Having thus fully set forth my improved compound and its operation, I wish it to be understood, that I do not claim any of the ingredients contained therein, when employed separately, as they have long been known, but what I do claim as my invention and for which I desire to secure letters patent, is the above described compound consisting of soap and ley, pearlash, or soda with ammonia, and spirits of turpentine in the proportions, substantially as herein set forth.

S. CRANE.

No. 7050.—*Improvement in Utero-Vaginal Supporters.*

Having described my invention, I will now state what I claim as new and desire to secure by letters patent.

First. I claim the combination of the elevating levers E, E, with the tube



*A*, made of any material, and the mode of raising and spreading the said elevating levers by the screw *F*, with its conical groove as herein described, or in any way, substantially the same.

Second. I further claim the capsule *H*, distended by the sponge *G*, introduced through the tube *A*, for the purpose of supporting the uterus and vagina, in the manner herein set forth.

RUSSELL CAULKINS.

No. 7051.—*Improvement in Steam Boiler Furnaces.*

Having thus described the several improvements I have made in the construction, and arrangement of my steam boiler furnace, and the steam blower therefor, for the purpose of economizing fuel by rendering its combustion more perfect, and by reclaiming a portion of the waste heat of the flues and exhaust steam, what I claim therein as new and desire to secure by letters patent, is the injection of whirling jets of highly heated steam among the gases evolved by the fuel on the grate, simultaneously with the forcing by the steam blower of a stream of mingled steam and heated air through the ash-pit into the fire; the air being heated, substantially in the manner described by the exhaust steam and waste heat of the flues, and the draught of the flues being maintained by whirling jets of steam injected by the steam blower.

BENJ. CRAWFORD.

No. 7052.—*Manufacture of Illuminating Gas from Bitumen.*

What I claim as my invention, and desire to secure by letters patent, is the use of compact and fluid bitumen, asphaltum, chapapote, or mineral pitch for the production of illuminating gas, to be substituted for other materials now in use. I also claim the retort *B*, in combination with its movable case *C*, in the manner and for the purposes set forth.

ABRAHAM GESNER.

No. 7053.—*Preparation of Animal and other Manure.*

I am aware that sulphuric acid has been employed as a manure alone, and also to decompose bones for the purpose of procuring super phosphate of lime to be used as a manure; these applications of it I therefore do not claim.

What I do claim as my invention, and desire to secure by letters patent, is the use of the mineral acids to act upon the soft parts of animals, or upon azotous vegetable matter, at temperatures varying according to circumstances, as herein set forth for producing a concentrated manure.

Second. I also claim the combination of the mineral acids with the different salts as described, for modifying the antiseptic action of the acids on azotous materials, and for rendering them pulverulent, whether said azotous materials be animal or vegetable.

Third. I also claim the combination of the mineral acids with wood tar, coal tar, or their equivalents, in the manner and for the purposes herein set forth.

ROBT. HARE.

No. 7054.—*Improvement in Apparatus for Heating Air by Hot Water.*

Having thus fully described my improved apparatus, what I claim therein as new, and for which I desire to secure letters patent, is the peculiar construction and arrangement of the heating apparatus by uniting the series of



straight horizontal pipes into gangs by vertical end pieces C, through which the circulating water is conveyed to all the pipes in the gang, in combination with the union boxes D, D', the series of gangs forming the cluster being united at one end at the top of the end pieces by the union box D, and at the opposite end, at the bottom by a similar box D', through which the water circulates to all the pipes, by means of a flow and return pipe, connected with the boiler or heater at the furnace, as herein clearly specified.

ADRIAN JANES.

No. 7055.—*Improvement in Self-waiting Tables.*

Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by letters patent, is arranging and operating a dumb-waiter and fan, so as to cause them to be self-acting, substantially in the manner and for the purpose described.

JOSIAH LAMB.

No. 7056.—*Expansion Gear for Puppet Valves.*

Having now described my invention, I will state what I claim and desire to secure by letters patent. What I claim therefore, is the use and employment of the connecting rod I, acted upon by two eccentrics in combination with the reciprocating plate H, and arm K, having an angular opening in it, and quadrant shaped plate J', or its mechanical equivalent attached thereto, for the purpose of working puppet-valves in form and manner, substantially as herein set forth.

THOMAS McLAUGHLIN.

No. 7057.—*Composition for the Manufacture of Sugar.*

That which I claim as my invention, and that which I desire to have secured to me by letters patent, is the *mutisme*, or process of treating saccharine solutions by means of a solution of acid sulphite of lime, baryta or strontia as herein before described, applied to products containing sugar from the cane or other vegetables, that the crystallizable sugar may undergo no chemical change either by the formation of secondary products which destroy it, or by the generation of ferments which modify or transform it.

MELSENS.

No. 7058.—*Improvement in Driving Bobbins upon Spindles.*

What therefore I claim as my invention, is the counter-sunk friction button, made substantially as specified, or in other words the combination of the friction annulus with the enclosed space for the reception of dirt and extraneous matter, when used in connection with the spindle and bobbin, substantially as specified.

OLIVER PEARL.

No. 7059.—*Improvement in Gearing for Sugar Cane Mills.*

I do not lay claim to the general arrangement, by which a heavy horizontal wheel is made to traverse on friction rollers. This I am aware, has often been done, when such wheel was fixed to its vertical axis, by permanent arms, especially for the purpose of enabling the wheel to support heavy weights, as in the common turn tables of railroad stations.

But in such cases there is no strain or vibration primarily given to the ver-



tical shaft, as is the case of the cane mill, having one of its rolls on the vertical shaft which is to be driven by the heavy face wheel.

But what I do claim as my invention, and desire to secure by letters patent, is the wheel A, revolving horizontally in combination with the jointed or loose braces *b, b, b, b*, connecting, but not fastening it to the shaft S, and with the fixed arm D, the vertical grooves *g, g*, and the friction rollers *i, i*, acting together, substantially in the manner and for the purposes herein set forth, not limiting myself in these claims to the exact number and arrangement of the several parts herein described, but varying the same at pleasure, while I attain the same ends by means substantially the same.

EDWARD PHELPS

No. 7060.—*Method of Sinking Hollow Piles, &c., by exhausting the Air from the Interior of the same.*

Having described what I consider as generally the most attainable means for producing the required effects, I do not intend to limit myself thereto, but to use any known mechanical means that may be best adapted to any particular circumstances, as I hereby disclaim any invention of the parts employed, irrespective of the manner in which they are to be used for any of these purposes.

What I claim as new, and of my own invention of improvements in the mode of sinking piles, tubes, caissons, shafts and other structures, and which I desire to secure by letters patent of the United States, consists in the attenuation of the air approaching to, or forming a vacuum in the interior of a hollow pile, tube, caisson, shaft, or other structure, by any of the known means of producing what is termed "suction," by which the hollow pile, tube, shaft, or other structure, is made to descend as before described.

L. H. POTTS.

No. 7061.—*Improvement in Looms for Piled Fabrics.*

We do not wish to confine ourselves to the precise mechanical arrangements herein specified for operating or shifting the picker tappets, although we have essayed it with success, and deem it the best; but other arrangements may be devised for carrying this part of our invention into effect.

As to the third part of our invention, any desired known means of regulating the friction of the fly-wheel on the shaft may be substituted for the temper screws herein above described, as the means of regulating the friction is not of the substance of our invention; nor is it essential to our invention, that the friction be adjustable, although we deem it advisable to have it so. In the adjustable mode of throwing back the shuttle staffs, we do not wish to confine ourselves to the use of a nut, to regulate the tension of the helical spring, as other mechanical equivalents may be substituted therefor--such as a wedge in a slot; but we have described and represented the nut as the most advantageous in our estimation.

In relation to the fifth part of our invention, we do not wish to limit ourselves to the number of rollers, nor to the mode of making friction on the rollers, over which the warps pass, as our invention is irrespective of these.

We do not wish to limit ourselves to the precise arrangement above described, for connecting the ratchet wheel of the take up motion with the roller, as this may be varied at pleasure, without affecting the mode of operation of this part of our invention.

And finally, with regard to the last part of our invention, we do not wish to



be limited to the precise direction, in which the thread is carried from the eye near the end of the shuttle, to the delivering eye, near the middle of the length thereof, as this may be slightly varied, and still retain the character of this part of our invention.

What we claim as our invention, and desire to secure by letters patent, is—

First. Dividing the heddles into two or more divisions to be worked in succession, substantially as herein described, that the entire opening of the shed may be effected in succession, and thus avoid the evil effects consequent on the opening of the shed, at one operation, as heretofore described.

Second. Operating the two picker levers or treddles, by means of a shifting tappet operated or shifted alternately for each pick by means of an eccentric or its equivalent, that the shaft which carries the tappet or tappets, may make one entire rotation for each throw of the shuttle, substantially as herein described, and thus operating the shuttle by a tappet rotating with greater velocity than by any means heretofore known, as described.

JAMES TURNBULL, Jr.  
JOHN TURNBULL.

No. 7062.—*Improvement in Mills for Grinding.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the cone screws as above described, with the beaters or rubbers on the cylinder, substantially as described.

JOSEPH W. WEBB.

No. 7063.—*Improvements in Flour Bolts.*

We do not claim to be the original and first inventors of bolts for bolting the flour, or of any of the several parts of the bolting apparatus that have heretofore been used for that purpose in the ordinary modes, but what we do claim as our invention, and desire to secure by letters patent, is—

The combination of the revolving wire screens with the ordinary bolts, whether stationary or revolving, for bolting flour, by which the larger particles of bran and extraneous substances that may chance to pass into the bolts with the meal are separated therefrom by the said wire screens, and are thus prevented from coming in contact with the bolting cloth, whilst the wings drive the flour through the screens and bolting cloth, by the combined action of centrifugal force and currents of air produced by the rotary motion of said wings, by which the advantages stated in the foregoing specification are obtained.

JOHN M. REED.  
WM. B. WILLIS.

No. 7064.—*Improvement in Machinery for Spooling.*

Having thus described fully the material parts of the machine in which my improvements are introduced, and also those improvements, what I claim as my invention, and desire to secure by letters patent, is not the abstract production of friction between the thread or yarn, and any other substance, as the thread or yarn passes from the runners to the bobbin or spool, so as to secure the winding of the thread or yarn, tightly on the bobbin or spool; but I do claim as my invention, and desire to secure by letters patent, the combination of machinery herein before described, whereby in machines for winding yarns or threads on bobbins or spools, the thread or yarn on its passage from the runners to the bobbin or spool, has applied to it friction produced between



the thread or yarn, and any other substance, which friction diminishes with uniformity as the pull upon the thread or yarn from the runners increases, and increases with uniformity, as the pull upon the thread or yarn from the runners diminishes—such combination consisting, as shown in the accompanying drawing, of the vibrating lever M, M, the stand L, L', the joint L', the three pins N, O, P, the four pins H, I, J, K, the box G, G, the spiral spring Q, any one of the three hooks S, T, U, the staple at R, and the guide W, substantially as herein set forth.

EVERY BABBETT.

No. 7065.—*Improvement in Carding Machines for preparing Bats for Felting.*

Having thus fully described my invention, I would state that I do not claim the producing an interlocking of the fibres of wool, by means of a reciprocating longitudinal movement of either the carding cylinders of a carding machine working against the doffer.

But what I do claim as my invention, and desire to secure by letters patent, is the production of the requisite interlocking combination of the fibres of wool, preparatory to converting the same into felt cloth, by subjecting the said fibres to a rubbing or combing action, while they are upon the doffer of a carding machine, by means of auxiliary cards, or other suitable friction surfaces, substantially as herein set forth; not intending by this claim, however, to limit myself to the special and particular manner of producing the said interlocking of the fibres of wool, while they are upon the carding machine doffer, as herein set forth.

SAMUEL G. BLACKMAN.

No. 7066.—*Preparation of Portable Soup Bread.*

Having thus explained my invention, I do not claim the extract of flesh made into what is known as portable soup; but I claim the new and useful manufacture of desicated soup bread, formed of the concentrated extract of alimentary animal substances, combined with vegetable flour or meal, made into cakes and baked into bread, in the manner, substantially as herein described, for the purpose set forth.

G. BORDEN, Jr.

No. 7067.—*Improved Excavating Auger.*

What I claim as my invention, and desire to secure by letters patent, is the formation of a machine or instrument, for boring the earth under water, or otherwise, and retaining the substance bored until it can be brought to the surface, which I construct in the manner following: I first make two sections of a cylinder, or pods, the one of which is enough smaller than the other to admit its turning into the larger one, and I connect them together by pivots through the ends of each, the larger section of a cylinder or pod having a lip similar to a pod auger, and I attach a shaft or handle firmly to the upper pivot, which pivot passes through the centre of the outer section of a cylinder or pod, and is attached firmly to the smaller section of a cylinder or pod, so that by turning the shaft one way, I put it into a pod auger shape ready for boring. By reversing the motion of the handle or shaft it turns the inner section of a cylinder out of the other, making it into a cylindrical or bucket shape, and thereby secure the substance bored.

JAMES BUCK.



No. 7068.—*Improvement in Whip Lashes.*

What we claim as our invention, and desire to secure by letters patent, is a new manufacture for whip lashes, by making plaited whip lashes of spun and twisted threads or cords, as described, instead of leather thongs, the same being plaited over a central cord or core, extending the whole length as described, and a swell made of cotton, or other soft and pliable cloth attached to the central core, without rolling, substantially as described.

DAVID N. DAY.

EDWARD B. DAY.

No. 7069.—*Improvement in Machines for Cutting Staves.*

What I claim as my invention, and desire to secure by letters patent, is the mode of cutting staves to the required curvature, with a spiral drawing stroke, by means of the segmental plate *D*, having bar or ribs (*e*,) at its ends, to which the knife *f*, is attached, segmental rims *C*, moving in the segmental slots *B*, formed in the side plates *A*, and containing slots through which the segmental plates *D*, move spiral slots *E*, in the plates *D*, and bars (*g*,) passing through the same, substantially as herein set forth.

CHARLES B. HUTCHINSON.

No. 7070.—*Improvement in Washing Machines.*

I do not claim the tub, nor do I claim fluted rubbers for cleaning clothes, or any of the parts heretofore used for washing clothes; but what I do claim, is making the disc, with a hinged segment, to admit the clothes beneath the same, being so arranged as to rise and fall vertically, as it is turned horizontally over the clothes, by turning the vertical rock shaft to the right and left, as described.

JOEL HAINES.

No. 7071.—*Improved Friction Roller Sash Supporters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the loose roller, spring and friction wheel, applied to the window sash, as herein set forth, whereby the sash is held in any position to which it may be raised.

JOSEPH MAYNARD.

No. 7072.—*Improvement in Engines for Carding and Drawing Wool.*

First. Having thus explained our invention, we claim the combination of what is termed the main or condensing cylinder, with the reciprocating rod *F*, to give the carding cylinder a reciprocating side-to-side motion, in combination with its rotary motion, in the manner substantially as herein described, or in any other manner, substantially the same, to produce the same effects.

Second. We claim the combination of a twisting band and drawing rolls, with rub rolls of the common construction, for the purpose of reducing roping, by drawing it with twist upon the carding machine in the manner substantially as herein described, or in any other analogous manner.

CHARLES JACKSON.

JAMES MOIR.

No. 7073.—*Improved method of Punching between Rollers.*

Having thus fully described my improvements, in the preparation of iron



plates for boilers, what I claim therein as new, and for which I desire to secure letters patent, is the apparatus for the purpose of punching, consisting of a series of punches thrown out at proper intervals, substantially as above described, either with or without the combined operation of corrugating said plates as above described.

R. MONTGOMERY.

No. 7074.—*Improvement in Calculating Machines*

What I claim, therefore, as of my own invention, and for which I desire letters patent of the United States, is the making additions of figures, by means of a finger board of keys, each communicating a proper and known motion to an indicator, substantially in the manner and for the purposes herein described.

DUBOIS D. PARMALEE.

No. 7075.—*Improvement in Water Metres.*

Having thus fully described my improved machine for measuring water in its passage through pipes; what I claim therein as new, and for which I desire to secure letters patent, is the employment of a flat spring (e,) with both sides of which the water as it enters communicates, substantially in the manner and for the purposes set forth, in combination with the wings, with an adjusting spring in the centre, by means of which improvements I relieve the apparatus from danger arising from obstruction in its movement, and the strain caused by the transmission of a non-elastic fluid, and cause it to move with less friction than any other form with which I am acquainted.

WILLIAM SEWELL, Jr.

No. 7076.—*Improvement in Attachments for Lightning Conductors.*

What I claim herein as new, and of my invention, and desire to secure by letters patent, is forming the eye of the metallic attachment with an opening (c, c,) to allow the passage of a lug (a,) on the neck of the isolator, and so that the rod also can be inserted, after the attachment is secured to its place, when this is combined with a lug on the shank of the attachment, corresponding to that on the isolator, substantially after the manner and for the purposes herein set forth, that is to say, enabling the rod at any time to be inserted or withdrawn, without disturbing the attachment in the building.

JAMES SPRATT.

No. 7077.—*Improvement in Barrel Machinery.*

I claim as my invention in the stave cutter, and desire to secure by letters patent, the eccentric groove and cap, extending over or around the shaft to the side opposite the knife, the said cap constituting a part of the eccentric cam ring passing around the shaft, and having an opening through the said cam ring at the posterior termination of the cap, where the staves make their exit. And I also claim the whirl or secondary shaft, as described in combination therewith. I claim as my invention, the right and left stave holders, in the jointer, having flanges or thumb pieces to support the edge of the stave during the operation of jointing, and to ensure an equal width at each end.

I also claim as my invention, the horizontal jointer, in combination with an inside and an outside frame, to which the right and left stave holders are attached by hinges, and by which arrangement four or more boys may work



around one horizontal wheel or jointer, and operate simultaneously, being also thereby enabled to joint the staves with the grain of the wood, without loss of time.

I claim as my invention, the moveable centre in the head machine, in connection with the opposite face plate on an universal joint, between which the head block is held before it is brought in contact with the rubber of the face of the chuck, and the slide which holds the chissels, constructed substantially in the manner set forth.

I claim as my invention, the combination of the cutter (c,) with the jointed spring cutter (g,) and levers (b, b,) in fig. 6, for cutting the locks in wooden hoops, substantially as herein before described.

SOLOMON ANDREWS.

No. 7078.—*Machine for Cutting Cotton Stalks in the Field.*

What I claim as my invention, and desire to secure by letters patent, is the adaptation of iron and steel knives or cutters, to the cutting down, and cutting to pieces of cotton stalks, either in a green or dry state, in the manner and for the purpose above described.

FIELDS BRADSHAW.

No. 7079.—*Improvements in Machinery for Folding Cloth.*

What we claim as our invention, and desire to secure by letters patent, is the mode of folding and laying the cloth on the table or platform B, kept in a state of equilibrium by the weight (h,) wheel (e,) chain (d,) and rod (g,) by means of the notched bars (l, l') attached to the radial rods (k, k') secured to the shafts E, E, combs (j, j') attached to the shafts D, D', segmental plates G, G, bent bars (p, p') and H, H', arms J, J', horizontal and inclined connecting rods or bars (r, s,) slotted arm or crank (t,) constructed, combined, arranged and operated, as herein set forth.

AUGUSTUS C. CAREY.  
DANIEL C. BAGLEY.

No. 7080.—*Improvement in Rule and Socket Joints.*

What I claim as my invention, and desire to secure by letters patent, is the application to the rule joint, and to the ball and socket joint of the rod D, which is hinged into the ball or rule joint, to hold the joint as firm as desired, by means of the spiral spring G, on the India rubber spring P, as described.

CHARLES CHINNOCK.

No. 7081.—*Improvements in Arrangements of Fliers and Spindles.*

What I claim as my invention, and desire to secure by letters patent, is the manner of suspending the flier, separate from the spindle, by the flier being connected to, and forming a part of the tube (E,) the lower end of which revolves in a socket bearing, allowing the spindle of the bobbin to pass and move through it without touching it, so that however great the speed of the flier may be, it will be prevented from vibrating the spindle.

JOHN DERMOND.

No. 7082.—*Improvement in Air-Heating Furnaces.*

Having thus fully, clearly, and exactly described the nature, construction, and operation of my improvements in air-heating and steam infusing appara-



tus, for warming and keeping moist the atmosphere in apartments, what I claim therein as new, and desire to secure by letters patent, is constructing a furnace for heating air, with a spiral flue passing up between concentric cylinders, when this is combined with a conical roof to the furnace within the inner concentric cylinders, thus obtaining the most extensive radiating surface within the least space, and in the most compact and simple form.

HENRY ADOLPH ENGLES.

No. 7083.—*Improvement in Augers for Boring Machines.*

What I claim as my invention, and desire to secure by letters patent, is making the pod of an auger separate from the stem on which it is revolved, with a considerably greater velocity than the cutting bit, substantially as herein set forth.

GEORGE FLAUTT.

No. 7084.—*Improvement in Horse Rakes.*

What I claim as my invention, and desire to secure by letters patent, is the method of working the rake head, by means of the treadle (*g*,) in combination with the hand bars (*t*, *t*,) and the back piece A, *a*, as described.

I also claim the attachment of the stilts to the thills—(1,) in the manner and for the purpose described; all of which gearing being so arranged that a person on his seat, may change and discharge, or suspend the rake head at pleasure, as herein set forth.

ALVAN HOVEY.

No. 7085.—*Improvement in Hanging Carriage Bodies.*

Having thus fully described my improvement, what I claim therein as new, and for which I desire to secure letters patent, is the combination of cross reaches and springs, substantially in the manner and for the purpose set forth.

M. G. HUBBARD.

No. 7086.—*Improvement in Railroad Trucks.*

Having thus described my improvements in railroad cars, and other carriages, what I claim therein as new, and desire to secure by letters patent, is the combination of an endless track on the frame of the carriage, with an endless series of rollers running thereon, and guided by flanges, the endless track being supported on the peripheries of the rollers which intervene in endless succession between it and the surface of the ground or rail, and which are broad enough to keep themselves erect and steady without the use of axles or rods, extending across the carriage.

JAMES INGERSOLL.

No. 7087.—*Improvements in Planing Machines.*

What I claim as my invention, is the combination of the rotary planing cylinder E, and the rest *f*, with mechanism, by which the two can be freely moved up or down simultaneously, and independently of the bed or platform B, B', or any analogous device, substantially in the manner and for the purpose of reducing a board to equal thickness throughout its length, all as herein before specified.

I also claim the above described improvement of making the under side of the rest concave, in combination with so extending the part B, under the rest



*f*, and applying it to the concave part thereof, as to cause the board, as it passes across the rest to be bent, and presented with a concave surface to the operation of the rotary cutter planing cylinder, substantially as specified, the same being for the purpose herein before mentioned.

NICHOLAS G. NORCROSS.

No. 7088.—*Improvement in Bedclothes Clasps.*

What I claim as my invention, and desire to secure by letters patent, is the use of the cam and lever *e, e*, acting on the spring *b*, to constitute a clasp, in the manner and for the purpose set forth.

FRANCIS A. ROCKWELL.

No. 7089.—*Improvement in Tanning Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Revolving the tanning cylinders alternately in opposite directions, substantially as herein set forth.

Second. Handling the hides in the spent liquor from the tan vats *E*, substantially in the manner herein set forth.

Third. Liming hides or skins in a close revolving cylinder, substantially as herein set forth.

W. H. ROSENSTEEL.

No. 7090.—*Improvement in Smut Machines.*

Having thus described, and represented the construction, and operation of my new and improved smut machine, for cleaning grain, what I claim therein as new, and desire to secure by letters patent, is—

First. The grates (*B, B,*) in the top of the machine, in combination with the scrolls or spiral chambers *A, A*, and spouts *C, C*, for discharging smut and other light materials carried up by the blast, as set forth.

Second. I claim the chamber *I*, at the bottom of the cylinder which concentrates and gives free discharge to all foreign matter, to be separated from the grain by the blast in the last stage of operation of the machine, in the manner described and represented.

Third. I claim in combination with the concave bottom which gathers the grain for its discharge from the machine, the distributors *j, j*, fig. 6, which gives direction in the discharge of the grain separated from the foreign matter by the blast.

Fourth. I claim the draft floats *h, h, h, h*, fig. 5, in combination with the scouring surfaces *f, f*, for cleaning buckwheat, as set forth.

The whole being constructed, arranged, and operating, substantially in the manner and for the purpose set forth as made known.

LEONARD SMITH.

No. 7091.—*Improved Method of Bolting in Window Shutter Openers and Fasteners.*

Having thus fully described the nature, construction, and operation of my invention, what I claim therein as new, and desire to secure by letters patent, is fastening the window blind at any suitable point by means of bolts projecting on opposite sides of the pintle of the hinge by a driver, the bolts and driver being suitably guided, and the bolts passing into suitable notches on a plate attached to the blind or to the upper leaf of the hinge, thus not only re-



taining the blind in any desired position, but also at the same time relieving the pintle of the hinge from any strain athwart its axis, the whole being arranged substantially in the manner and for the purposes described.

S. B. SNEDEKER.

No. 7092.—*Improvement in Electric Telegraph.*

Having thus described my invention, and exemplified the manner in which it may be carried into effect, what I claim therein as new, and desire to secure by letters patent, is the making of signals or marks for telegraphic purposes, by the agency of the heat generated, induced, or controlled, by a current of electricity passed along attenuated conductors, wires or points, substantially as herein set forth. The signals being the flashes of light emitted by the heated conductor or points are manifest to the eye of the operator.

The marks being produced on the paper by the heated points or conductor are the record of the message.

WM. S. THOMAS.

No. 7093.—*Improvement in Castors for Furniture.*

What I claim and desire to secure by letters patent, is neither the ball, the socket, the vertical pivot, or either of the pivots of the ball, but the combination of the whole as above, substantially specified, whereby the ball of the castor is enabled to revolve across the two centres of the two axes of the ball, as set forth.

SOLOMON BERNHARD ULMANN.

No. 7094.—*Improvement in Connecting Trucks with Car Bodies.*

What I claim as my invention, and desire to secure by letters patent, is the mode of attaching car bodies to trucks by means of the trough A, (with the sloat c, and king bolt F,) and the rail B, constituting the segment traverse, as above described.

GEORGE VANDERHOOF.

No. 7095.—*Improvements in Machinery for Turning Umbrella Sticks, &c.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the hollow shaft or cylinder F, graduating cutters or knives L, made and ground exactly alike, and arranged on opposite sides of said shaft or cylinder, and cutting inward and in exact unison with each other, the feeding rollers O, arranged in front, and the receiver or carriage K, arranged in the rear of the shaft F, together with the case U, surrounding the cutters and wings (d,) for enabling them to act as a fan or blower to discharge the shavings; the whole being arranged and operated, substantially as herein set forth.

SOLOMON WEST.  
HIRAM PLUMB.

No. 7096.—*Improvement in Studs for Shirt Bosoms.*

Having thus described the construction and operation of my improved fastening for shirt-studs, what I claim therein as new, and desire to secure by letters patent, is constructing the shank in two sections, the first being fixed to, and projecting from the back of the stud, and the other being hinged to the first in such a manner that it can be brought in line with it or be turned



across it, as herein set forth, but I make no claim to the mere fastening of a stud, by means of a cross bar attached to a chain or other similar arrangement.

JAMES P. HEISS.

No. 7097.—*Improvement in Elevating and Lowering Carriage Tops.*

What I claim as my invention, and desire to secure by letters patent, is connecting a handle, lever, or any analogous device upon the inside of carriage tops, with joints or jointed braces upon the outside of the same, substantially in the manner and for the purpose set forth above.

JOHN L. ALLEN.

No. 7098.—*Adjustable Rollers for Window Curtains.*

I do not claim the confining the end of a curtain or piece of cloth, to a roller by means of a groove, and a strip of wood or other substance, placed and fastened therein, as I am well aware that such is not new; but what I do claim, is my improvement in the construction of the curtain roller, whereby I do not only attain all the advantages of securing cloth to it by the groove and strip, but am enabled to regulate or adapt the roller to any window of any ordinary width; my said improvement consisting in making the curtain roller and its guide heads in two parts, in such manner that the grooved section of the roller, and one head shall be united together and form a separate part, while the other section or tongue and the other head, shall also be united and constitute another part, the two parts being so applied, that when put together the tongue may be slid or fitted endwise into the groove in manner described, such a combination of the heads and groove, and tongue sections, enabling me to cut each section to the length required, and to readily adapt the roller to a window.

EDWARD S. CLARK.

No. 7099.—*Improvement in Lids for Boiler-holes of Cooking Stoves.*

Having thus fully described the nature, construction, and operation of our invention, what we claim therein as new, and desire to secure by letters patent, is—

Firstly. So arranging the lid (or centre plate,) in connection with the top plate of the stove, as that the lid, (or centre plate) when withdrawn from the opening, may be made to add its area to, and at the same time lie flush with or below the level of the top of the stove; this being effected by a neck proceeding from the lid (or centre plate,) in the direction of its plane, said neck, (whether the lid or centre plate be closed or folded back,) fitting and filling a notch in the stove top, and having lugs projecting from its sides, which lugs, bearing upwards against the top plate, or against shoulders projecting therefrom, sustain the lid when folded back.

Secondly. The arrangement, substantially as described, of journals on the neck, at or about midway of its length, forming a fulcrum upon which the lid can be folded back, either with its top face, or with its flue face uppermost, the lugs in this case being behind the journals, and midway of the thickness of the neck.

Thirdly. Constructing the lid (or centre plate,) with a handle projecting therefrom in the direction of its plane, and at its coldest point, so as to afford a means of operating the lid by hand, with comparative impunity and facility, and so as to avoid on the one hand any impediment to the shifting of the



cooking utensils, and on the other hand, the usual cavity difficult to mould, liable to collect dirt, and placed unavoidably at the hottest part of the lid.

THOS. G. CLINTON.

GEO. H. KNIGHT.

EDWARD H. KNIGHT.

No. 7100.—*Improvements in Raising and Lowering Carriage Tops.*

We do not claim the use of levers or handles upon the inside of carriage tops, connected with the jointed braces upon the outside, for the purpose of working the braces, but all that we claim as of our own invention, and which we desire to have secured to us by letters patent, is connecting the jointed braces upon opposite sides of carriage tops, by means of a shaft (A,) or rod passing back of the seat, in such a manner that the braces may be worked simultaneously upon both sides, substantially as herein described.

SOLOMON GODDARD.

HENRY WARFIELD.

No. 7101.—*Improvement in Locking Portable Safes to the floor.*

What I claim as my invention, and desire to secure by letters patent, is the device for locking down a portable safe or box to the floor, and at the same time locking the box, as described and shown herein.

HENRY HOCHSTRASSER.

No. 7102.—*Improved Process of Varnishing Buttons.*

What I claim as my invention and discovery, and desire to secure by letters patent, is the process of japanning and baking the buttons in bulk, substantially as is herein before described, after they have been prepared for the reception of a smooth coat of japan or other varnish, in the manner specified in my former letters patent, respectively, or in any other method, substantially the same.

ELISHA M. POMEROY.

No. 7103.—*Improvement in Portable Fences.*

What I claim as my invention, and desire to secure by letters patent, is fastening together the panels of portable fences, substantially as herein set forth, by means of binding irons and wedges.

PETER M. PURDY.

No. 7104.—*Improvement in Hulling Clover Seed.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement, and combination of the cylindrical cups R, R, and D, D, with each other, for the purpose of discharging the grain at C, and the lighter materials at O, as herein described.

JOSEPH POLLOCK,

*Administrator of Allen K. M'Griff.*

No. 7105.—*Improved method of Kneading Dough.*

What I claim therein as my invention, and desire to secure by letters patent, is the combination of a reciprocating kneading table, with a reciprocating breaker, substantially as herein set forth, but irrespective of the devices by which they are severally put in motion.

HENRY NORMAN RIDER.



No. 7106.—*Breast Plate for Harness.*

What I claim as my invention, and desire to secure by letters patent, is the centre draft and expansion breast plate for the horse harness, in combination with the use of the double fulcrum self-adjusting pad, applied either to the double or single harness, as set forth.

ORIN RAMSDELL.

No. 7107.—*Improvement in Bedstead Fastenings.*

What I claim as my invention, and desire to secure by letters patent, is the employment of bush pieces C, C, locked by the key piece E, in the manner and for the purpose set forth herein.

ROBERT RAMSEY.

No. 7108.—*Improvement in Fences.*

What I claim as my invention, and desire to secure by letters patent, is the method of constructing a self-adjusting and self-fastening fence of any material whatsoever, substantially such as herein described, the parts of which, when put together fasten themselves firmly, by means of a combination of locks and chairs, substantially as described, without the use of lead rivets, screw bolts, wedges, or any other of the modes heretofore adopted and used for the purpose.

ISAIAH SUBERS.

No. 7109.—*Improvement in Seed Planting Barrows.*

What I claim as my invention, is the employment of the gauge plate G, of variable thickness, in combination with the moveable tube L, and face plate K, and its springs, the same being applied to the hopper and conducting tube leading in to the furrow opener, and the whole being made to operate, substantially as specified.

CHAS. A. WAKEFIELD.

No. 7110.—*Improved Seed Planter.*

What I claim as my invention, is as follows:—I claim the combination of the curtain or apron, with the cylindrical or broadcast regulator.

I also claim the manner of constructing the regulator, or in other words, the combination of the prism with the side plates or boards, and their adjusting and confining mechanism, as set forth.

CHAS. A. WAKEFIELD.

No. 7111.—*Improvement in Burning Ornamental Figures upon Wood.*

What I claim as my invention and discovery, and desire to secure by letters patent, is—

First. The method I have described for constructing the mould or dies, so as to allow for the excessive depth they will charr the wood in certain parts of figures, in order that the whole figure when finished, shall be an exact resemblance of the original.

Secondly. I claim the channels or other like devices, cut in the face of the dies, for escape passages for the gases, smoke, &c.

Thirdly. I claim the use of an alkaline and acid solution, or baths to aid the removal of the charred surface.

I do not claim branding, or the production of uneven surfaces or fingers,



by hot metal mould pressed upon wood, but the several improvements, as above claimed on the art within described.

HAMILTON WOOD.

No. 7112.—*Improvement in Measuring Cloth on Looms.*

I am aware that a roller or cylinder and clock work have been combined and used for indicating the length of any surface, against which the periphery of the said roller might be placed and rolled, such a contrivance being generally known by the name of "way metre," "carriage metre," or "pedemetre." I am also aware that a roller or cylinder, and a pencil marking apparatus have been applied to the cloth beam of a loom, in order to mark into equal lengths or parts, the cloth woven upon the said cloth loom.

I therefore, neither claim such contrivances, nor the methods by which they have been applied and used. But what I do claim as my invention, is the arrangement of the roller and clock work directly upon the breast beam of the loom, and with respect to the cloth or selvage thereof, as specified.

JOHN G. WEBSTER.

No. 7113.—*Improvement in Seraphines.*

I do not claim the use of wooden sounding reeds abstractly, nor the adjustable blocks, nor the combination of duplicate blowers with a keyed reed instrument. But what I do claim as new, and desire to secure by letters patent, are—

First. The combination of wooden sounding reeds with wooden reed-plates, constructed in the manner herein described.

Second. The combination of the adjustable blocks T, with the duplicate blowers A, and the lifting rods X, arranged as herein described, and

Third. The combination of the two sounding boards *a, a*, and the piano board *b', b'*, with the sounding reeds and keys, arranged in the manner and for the purpose herein set forth.

RUFUS H. GREEN.

No. 7114.—*Improvement in Machines for Cutting Cap Fronts.*

I do not claim any one part used herein separately, as all are well known. But what I do claim as new, and of my own invention, and desire to secure by letters patent, is the construction and application of the frame *f*, with the blades 6, and 7, and guide pins 4, 4, taking holes in the bed *e*, to work in either direction from the centre, all these parts being constructed and operating, substantially as described and shown; and I claim in combination with the foregoing, the bed *k*, fitted with supporting guide rollers 11 and 12, and adjusting bar 14, with rollers 15, moving over the bar *l*, and taking the indentations to adjust the position of the material, over the cutter blades 6 and 7, the whole constructed and operating, substantially as described and shown.

GEORGE BURGESS.

No. 7115.—*Improvement in Gas Generating Apparatus.*

Having thus fully described my improved apparatus, and mode of manufacturing gas, what I claim therein as new, and for which I desire to secure letters patent, is the supply tube, combined with the vaporizing cup, as herein set forth, for the double purpose of supplying liquid for making gas, and for vaporizing the same before it comes in contact with the decomposing surfaces.



in the retorts, for the purposes set forth. I also claim the compound retort, constructed and arranged as above specified.

CHRISTOPHER T. BROWN.

No. 7116.—*Improvement in Sofa Bedsteads.*

First. What I claim as my invention, and desire to secure by letters patent, is the ordinary seat of a sofa, (or other suitable article of furniture,) so arranged as to revolve on a centre at each end, in a frame so constructed, as to turn over and bring the top or stuffed side of the seat, (by revolving the same,) on a level with another seat or bed, placed under the ordinary seat.

Second. I also claim the use of the stuffed ends forming the support for the top seat when turned over and used as a bed.

No. 7117.—*Improvement in Connecting Hubs with Axles.*

What I claim as my invention, and desire to secure by letters patent, is enclosing the spring collars that fit and run in the groove of the axle, within a box at the inner end of the hub, substantially as herein described, when this is combined with the ring fitting to and turning on the outer periphery of the box, and acting on the ends of the spring collars for the purpose of drawing them out of the groove when it is desired to take off the hub, substantially as described.

JUNIUS FOSTER.

No. 7118.—*Improvement in Churn Dashers.*

What I claim as my invention, and desire to secure by letters patent, is the hinging the series of beaters *b, b*, to the dasher rod, in such a manner that their faces will be thrown into inclined positions by the upward movement of the dasher, and into horizontal positions by the downward movement thereof; when the said vibrating beaters (*b, b*,) are combined and act in concert with the series of vertical faced beaters or wings *d, d*, (upon the same dasher rod,) substantially as herein set forth.

ISAAC D. GARLICK.

No. 7119.—*Improvement in Iron Railings.*

I wish it to be understood, that I do not claim forming joints, or connecting irons by lead packing, as that has before been done, but what I do claim, and for which I desire to secure letters patent, is constructing the railings or upright rails, as herein described with holes in them, by means of which they slide freely in the horizontal bars, and with a cavity for containing lead or other proper metal surrounding said bar, for the purposes of allowing the railings to be placed and fastened at any desired distance from each other, substantially in the manner and for the purpose set forth, by means of which I form a cheap and perfect railing of different lengths with the same number of railings, and firmly secure the rails in place.

WM. HAMILTON

No. 7120.—*Improvement in Clothes Frames.*

Having thus fully described the construction and operation of my improved portable clothes frame, what I claim therein as new, and desire to secure by letters patent, is the combination of the jointed arm *G, G*, bars *H, H*, and rods *I, I*, with the collars *B, C, D, E, F*, and the mast *A*, by means of the stay cords *n, n*, and the cords *l, l*, and *m, m*, substantially in the manner and for the purpose herein set forth.

HUMPHREY KEMPTON.



No. 7121.—*Improvement in Refrigerators.*

Having thus fully described the construction, and operation of my improved refrigerator, what I claim therein as my invention, and desire to secure by letters patent, is the inclosing water space A, for cooling the preserving chamber B, in combination with the pipe *d*, for discharging the waste water, substantially in the manner herein represented and described.

EPHM. LARRABEE

No. 7122.—*Improvement in Scale Beams.*

What I claim as of my own invention, and desire to secure by letters patent, is the combination of two or more scale beams, (having fixed and independent points of suspension,) with each other at the points (*e*,) and (*f*,) where the weight is usually attached, substantially in the manner, and for the purpose herein set forth.

S. T. McDOUGALL.

No. 7123.—*Improvement in Meat Cutting Apparatus.*

Having thus explained my invention, I claim the studs placed on the bar, in combination with the openings L, L, to direct the minced meat &c., into the said openings, that is, directing the said minced matters into either one of the openings, every revolution of the block, to prevent the minced meat, &c. from undergoing unmincing as set forth.

JOHN G. PERRY.

No. 7124.—*Improvement in Distilling Oleaginous Matter.*

What we claim as our invention, and desire to secure by letters patent, is facilitating and improving the distillation of fatty and oleaginous substances by the introduction of steam, at or near the bottom of the boiler, containing such substance, substantially as herein described, in combination with the application of external heat as described.

And we also claim the process, substantially as described, of distilling fatty and oleaginous substances by means of a bath of melted lead, or any alloy which will melt at the same temperature, substantially as and for the purpose described—whereby we are enabled to effect the distillation of the lowest possible temperature, and have a practical indication of such temperature as described.

A. M. POISAT.

D. C. KNAB.

No. 7125.—*Method of giving a Rotary Motion to Metal in Casting Chilled Rolls.*

Having thus described my invention, while I disclaim any exclusive right to the use of the circular motion in casting chilled rolls, inasmuch as that has been for many years known and used, what I do claim as my invention, and desire to secure by letters patent, is the use of the dam *d*, attached to the rod *r*, placed inside the mould in chilled rollers, and similar castings, as herein before described, for the purpose of producing a circular motion in the melted metal.

JOHN C. PARRY.



No. 7126.—*Parallelogram Steering Apparatus.*

Having thus described my improvements, I shall state my claims as follows :

What I claim as my invention, and desire to have secured to me by letters patent, is a steering apparatus in which the operating screw, and nut are connected to, and turn the rudder post by means of a series of parallel arms and cross bars, arranged and combined together in the form of a parallelogram, and jointed together so as to turn freely, substantially as herein described.

JESSE REED.

No. 7127.—*Improvement in Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the flues W, C, and *a*, in the accompanying drawing, in combination with the funnel shaped air pipe E, in fig. 2, of the accompanying drawings, in such manner that a union will be formed between the oxygen of the atmosphere, and the hydrogen of the smoke at the lower extremity of the flue W, W, in the accompanying drawings, where the heat caused by the action of the fire on the partition between the flue W, W, and the flue C, in the drawings, and radiating from it will produce combustion of those gases as they ascend through the flue W, W, in the drawings accompanying this specification.

PETER SWEENEY.

No. 7128.—*Improved Hydrolator.*

I am aware that an elevating rope has been passed through an opening in a windlass drum, and confined to the shaft within the same, for the purpose of enabling the length of the rope to be regulated as circumstances might require, and therefore I do not claim this as my invention, but what I do claim as new and desire to secure by letters patent, is the combining with a hydrolator (for first elevating water or other substance, and then conveying the same to a distance,) a double acting drum, constructed substantially as herein described, in such a manner that the vertical raising and lowering movement of the bucket or its equivalent, may be at a slow movement, and an accelerated leverage and the horizontal or inclined conveying movement may be at an accelerated speed and a diminished leverage.

ZURIEL SWOPE.

No. 7129.—*Improvement in Apparatus for Making Coffee.*

The strainer *a*, and its spring contrivance in their application to the coffee receptacle or box, constitute what I have termed the spring expander, and in the employment of the same, I do not intend to confine my invention, to the precise form or arrangement of parts as exhibited in the drawings, as I am aware that the same may be varied in various ways, while the principle of the invention is still maintained. For instance, the spring may be placed between the tops of the two boxes F, and H, instead of on the outside of the top of the box H, as seen in the drawings. The spring expander may be disposed within the box F, but I do not consider such change as presenting the advantages of construction, operation, and repair, as are presented by the mode of making the improved cafetiene, as exhibited in the drawings.

What therefore, I claim as my invention, and as new, is the spring expander, in combination with the coffee box or receptacle, the same being for the object or purpose, substantially as herein before specified.

NATH'L WATERMAN.



No. 7130.—*Improvement in Machinery for Spinning Yarn and making Rope.*

What I claim as of my own invention, and desire to secure by letters patent, is—

First. Giving to the strand during the operation of spinning, a double twist to each revolution of the rings or flyers, in the manner described herein, the same being applied to, and claimed in the spinning of yarns from any fibrous material, and also in laying the strand into rope, in the manner set forth.

Second. I claim the combination of the weight (*l*,) and (*e*,) with the bobbin stands for the purpose of preventing those from being carried around with the rings or flyers; the whole being arranged and operated, substantially in the manner and for the purpose herein described.

CULLEN WHIPPLE.

No. 7131.—*Improvement in Invalid Bedsteads.*

What I claim therefore, as my invention, is the combination of the inclining frame *B*, with the back seat, foot frames and main bedstead, substantially in manner, as herein before specified.

A. W. BARKER.

No. 7132.—*Adjustable Cord Hook for Door Springs.*

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is the use of the adjustable cord hook or attachment (*H*,) for the cord, whereby the tendency of the spring to close the door is made to vary at pleasure, as herein set forth. I also claim in combination with a spring and fuse, having the diminution of the diameter of the coils on the fuse more rapid than the decrease of elasticity in the spring, by uncoiling the moveable cord attachment (*H*,) whereby the tendency of the spring to close the door is varied more rapidly than would be due to the simple change of position of the hook alone, in the manner and for the purpose herein set forth.

WM. B. BARNARD.

No. 7133.—*Improvement in Machinery for Planing Slats for Blinds.*

Now, what I claim as my invention, and desire to be secured by letters patent, is the engaging and disengaging the propelling slide block and carriage, by the continued action and connection of the dart holder *T*, springs *D*, *D*, and expander *S*.

GEO. BONWILL.

No. 7134.—*Fastening for Hay and Manure Forks.*

What I claim as my invention, and desire to secure by letters patent, is forming the tines or prongs *B*, of the hay fork, and the additional tines or prong *C*, which connect the same into a manure fork, out of single bars of steel, bent to the desired form, and securing the same to the handle *A*, by inserting them through the slot or mortise in the same, and driving keys or pins (*b*, *c*,) behind the same, substantially as herein set forth

ALINZOR CLARK.

No. 7135.—*Improvement in Carriage Jacks*

Having thus fully, clearly and exactly described, and represented the nature, construction, and operation of our improvement, in carriage or lever jacks, what we claim therein as new, and desire to secure by letters patent, is constructing the lever (*e*,) or its equivalent, with teeth (*p*,) prongs (*g*,) and cams



(*d*,) or their equivalents, in such juxtaposition, the one with regard to the other, that when it is necessary to release the rack from its load, these parts of the lever appropriately unite in action with the teeth (*c*,) and the ways (*b*,) of the rack (*a*,) or their equivalents, and with the pendants (*r*,) and the tooth (*n*,) of the latch (*j*,) or their equivalents, to take the load off and release the catch, retreat and make the frame of the catch a fixed point of resistance for the prongs of the lever, force out the lever tooth from the rack tooth, (the cam the while putting pressure upon the ways of the rack,) and oppose by the cams the requisite friction, and consequently resistance to the descent of the rack, the whole being arranged, substantially in the manner and for the purpose set forth.

THOS. G. CLINTON.

GEO. H. KNIGHT.

EDWARD H. KNIGHT.

No. 7136.—*Improvement in Firing Kilns for Pottery Ware, Black Lead, Crucibles, &c.*

I am aware that rosin as fuel has been incidently substituted for wood and coal in various kinds of furnaces, for melting glass, &c., but I am not aware that it has ever been substituted for other kinds of fuel in baking pottery, bricks, or other kinds of earthenware, with the view to equalize the baking, and to prevent the action of oxygen on the surface of such articles to be baked as are injuriously affected by it, and therefore, I do not claim generally as my invention, the use of rosin as a substitute for other kinds of fuel; but what I do claim as my invention, and desire to secure by letters patent, is the use of rosin or the distillation thereof, as a combustible, for baking pottery and all other kinds of earthenware, substantially as described, as a means of preventing such articles from being "over fired," or "slack burned," and whereby also, the injurious action of atmospheric air on the surface of black lead crucibles, pottery ware, bricks, &c., is avoided as described.

JOS. DIXON.

No. 7137.—*Improvements in Looms for Figured Fabrics.*

Having now described the nature of my improvements and their mode of operation, I claim as my invention, and desire to secure by letters patent, the following, viz :

Firstly. Obtaining the picking motion, or (otherwise expressed) giving action to the picking shaft, by means of the shaft *D*, carrying the picking fingers *D'*, oscillating with the lay, in combination with the mode of raising and depressing the fingers *D'*, by the combination of the cam *a<sup>e</sup>* and lever *e<sup>4</sup>*, the said cam being detached from the other parts of the loom, thereby enabling it to be easily changed, in the manner and for the purpose above specified.

Secondly. I claim the pattern plates *p<sup>3</sup>*, made and worked in the manner and for the purpose herein fully made known, in combination with the pattern levers *o*, with the pins *o'* fixed in them, the lever *T*, and cam *T<sup>2</sup>*, for the purpose of lifting said pattern levers *o*, the star driver *p''*, and the star plate *p<sup>9</sup>*, the mitre wheel *p<sup>7</sup>*, and *p<sup>8</sup>*, shaft *p<sup>6</sup>*, and bevel wheel *p<sup>4</sup>*, and *p<sup>5</sup>*, in connection with cylinder *p*. The respective motions herein referred to, being carried on or effected, substantially in the manner and for the purpose herein fully made known.

Thirdly. I claim the combination formed by the mechanism, for moving the shuttle boxes, that is to say, the cam *s<sup>3</sup>*, lever *s*, and pulling catcher *o<sup>2</sup>*, to-



gether with the bevel wheels  $K^2, ^3, ^4, ^5$ , and intermediate bevels  $K^7$ , and  $K^6$ , together with the star driver  $L$ , and star plate  $L'$ , and pinion  $I$ , and the shaft  $K^7$ , bevels  $L^2$ , and  $L^3$ , and shaft  $L^4$ , together with the star driver  $M'$ , and star plate  $M^2$ , said bevels, shafts, star drivers, and stars oscillating, with the lay, and acting from the same centre, so that the connection between the shuttle boxes and bevels, is never broken or detached. The whole being constructed and arranged in the manner and for the purpose herein fully described. I do not limit my claim to the precise arrangement herein set forth, nor to the moving of any particular description of shuttle boxes, but I do claim my combination of motions used for the purpose of moving shuttle boxes of any description, when such arrangements and combinations are, substantially the same with that herein described.

Fourthly. I claim the apparatus for holding the pins in star driver  $L$ , or the pins in the bevels  $K^2, ^3, ^4, ^5$ , and consequently the shuttle boxes connected therewith, in a proper position, or more particularly the lever  $D^2$ , and rod  $c^0$ , connected to the bracket or carrier  $a^0$ , and the action to said lever being given by the oscillation of the lay, in the manner and for the purpose herein specified.

SAMUEL ECCLES.

No. 7138.—*Improved Apparatus for Registering the Depth of Water in Vessels' Holds.*

What I claim as my invention, is the combination of the secondary index hand apparatus, with the primary index hand apparatus, or that which denotes the depth or rise of water, the secondary index hand apparatus being for the purpose of registering the extreme depth, as above stated.

NELSON EDWARDS.

No. 7139.—*Improvements in Machinery for Dressing Hemp and Flax.*

Having thus described my invention, what I claim is the combination of the toothed cylinder  $B$ , the wind passage  $P^2$ , the trunk  $O^2$ , the endless apron  $I$ , the set of feed rollers  $F, F, G$ , the concave  $K$ , and the waste apron  $N$ ; the whole arranged and made to operate together, substantially in manner and for the purpose as above set forth.

And in combination with the feed apron, its roller  $F$ , and toothed cylinder  $B$ , I claim the projecting shield  $N^2$ , the same being for the purpose of protecting the apron from injury and wear as specified, also to protect the journals of the rollers from winding up with waste or lint.

WM. W. GRANT.

No. 7140.—*Improvements in Railroad Cars.*

Having thus pointed out the nature or principle of my invention, the manner of constructing and using the same, and the advantages thereof, what I claim as my invention, and desire to secure by letters patent, is supporting and connecting both ends of the main platform of a railroad car, each with the centres of secondary platforms, which secondary platforms are connected at each end with, and supported each on four wheeled trucks, all substantially in the manner and for the purpose specified

GEO. S. HACKER.

No. 7141.—*Improvement in Corn Ploughs.*

Having thus fully described my improved corn and potato plough, what I claim therein as new, and for which I desire to secure letters patent, is the



moveable expanding wings, combined and moved, substantially in the manner and for the purpose herein described, by means of right and left screws on a cranked shaft, that can be turned while the plough is in motion.

ROBT. J. KING.

No. 7142.—*Improvement in Cooking Ranges and Air-Heating Furnaces connected therewith.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Equalizing the heat in the oven, by allowing the air to circulate and ascend through the chamber, between the fire box and front oven plate, for the purpose, substantially as set forth.

Secondly. I also claim so constructing the contractors, as that two of the boiler holes may be changed into one of the same size as either of the other two, by which means a boiler hole may be had directly over the centre of the fire, or four boiler holes reduced to two, all being of the same size as described.

Thirdly. I claim in combination with the air-heating apparatus, the disposition or arrangement of the valves  $a'$ , and  $t, t$ , with either of the valves  $s, s$ , on the door  $c'$ , for the purpose of ventilation as described. The position of the valves are not material, so that their combined operation shall be as set forth.

JAMES MCGREGOR.

No. 7143.—*Improvement in Air-Heating Furnaces.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Making the heating cylinder in sections, in combination with the segments of tubes or vertical cavities, cast on the plates at the laps containing sand, substantially as described, whereby they are rendered air-tight, as described.

Second. I claim the mode of fastening the handle to the grate, and keeping the grate true with the handle, by means of the bolt ( $t$ ), by which they are connected with the two studs ( $v, v'$ ), as substantially set forth.

Third. I claim the separate chamber for the fire pot, which is suspended below the chamber of combustion, to prevent the air heated by the fire pot from entering into the air chamber ( $b'$ ), surrounding the heating cylinder for the purpose, and in the manner as substantially set forth.

Fourth. I claim admitting air and flame through the pipe ( $w$ ), and its aperture or apertures ( $z, z, z$ ), into the chamber of combustion and radiation, in the manner and for the purpose, substantially as set forth.

Fifth. I also claim this mode of introducing the heated air and flame, in combination with the descending draught as described.

JAMES MCGREGOR.

No. 7144.—*Improvement in Cooking Stoves.*

Having thus fully described my improved coal cooking stove, what I claim as my invention, and desire to secure by letters patent, is the arrangement of the valve or damper A, above the back plate of the fire chamber in combination with the register F, for regulating the draft, as herein fully set forth.

CHARLES MURRAY NELSON.

No. 7145.—*Improvement in the Composition for Enameling Hollow Ware.*

Having thus described the nature of our said invention, and the manner of performing the same, we would have it understood, that we do not confine



ourselves to the details herein given, but what we claim is the new and useful glazing composition for coating articles of iron to prevent oxidation, substantially as specified.

CHARLES EMILE PARIS.

CHARLES HENRIE PARIS.

No. 7146.—*Improvement in Apparatus for Retaining Cars on the Rails.*

What I claim as my invention, and desire to secure by letters patent, is combining the trucks or other suitable parts of locomotives, freight, and passenger cars with the rails, by means of two bars, one vertical and one horizontal, connected in such way that oscillations and other vibratory movements of said cars, will be permitted without disengaging the hooks or rollers attached to the lower ends of the vertical bars, from the flange of the rails, the whole being arranged, substantially in the manner described herein.

W. PAYNE,

*Late Capt. R. L. Engineers.*

No. 7147.—*Improved Winged Metallic Cartridges.*

What I claim as my invention, and desire to secure by letters patent, is the method of enclosing the charge of powder in the hollow part of the ball, by slitting its rear end and bending in the parts so slitted, substantially as herein described, that when the ball is discharged the parts so slitted may be forced out, to become feathers or wings to guide the ball, substantially as described.

A. D. PERRY.

No. 7148.—*Improved process in the Manufacture of Glucose.*

What I claim as my invention, and desire to secure by letters patent, is the conversion of corn meal into a solution of grape, sugar, or glucose, by boiling the same under a pressure greater than that of the atmosphere in water, acidulated with sulphuric acid, substantially in the manner described.

GEORGE RILEY.

No. 7149.—*Improvement in the construction of Fire Places and Throats of Chimnies.*

What I claim as my invention, and desire to secure by letters patent, consists in constructing chimnies with an additional flue A, in the back of the fire place, made in the manner and for purpose herein fully set forth, in combination with the bringing down of the main flue D, of the chimney stack, as above described, with the horizontal offset c, at the top of the back of the fire place, and the spaces E, at the sides, all as herein fully set forth.

CHAS. W. RUSSELL.

No. 7150.—*Improvements in Mail Axles.*

What I claim as my invention, is the making open grooves of whatever form, cast, or cut in, or upon the large end of axle boxes upon carriage axles, technically known as mail axles, and upon axles for cars with short bolts, with whatever form of head, fitted into the grooves for securing the wheels and boxes upon such carriage axles, and upon cars in the place of, and to supercede long bolts, which are now in use for securing such wheels and boxes.

W. H. SAUNDERS.



No. 7151.—*Improvement in Cooking Ranges.*

What I claim as my invention, and desire to secure by letters patent, is extending back the front boiler chamber or chambers, to form the back boiler chamber or chambers, at the side or sides of the elevated oven, substantially as described, in combination with the partition or partitions at the side of the front boiler chamber or chambers, and extending back of the back boiler chamber or chambers, when the said partition or (partitions) is provided with flue holes at the side of the side boiler or boilers, and back of the back boiler or boilers, and leading to the flue around the elevated oven, substantially in the manner and for the purpose specified.

FRED. H. STIMPSON.

No. 7152.—*Improvement in Chimney Caps.*

What I claim as my invention, is the improved ventilator, constructed of a combination of a series of external plates, a series of internal plates and openings, or smoke passages, arranged, covered, and applied to a flue, and made to operate together, substantially in the manner as above specified.

EDWARD WHITELEY.

No. 7153.—*Improved Scraper for Removing Snow from Ice.*

Having thus described my improvements, I shall state my claim as follows: What I claim as my invention, and desire to have secured to me by letters patent, is an ice scraper, constructed substantially as above described, that is, in the form of a triangle, (so that in moving in either direction, the snow will be thrown by the diagonal sides at right angles to the course of the scraper,) and the base having guides which move in grooves forward in the ice, and control the motions of the implement, as herein above set forth.

NATH'L J. WYETH.

No. 7154.—*Improvement in Gas Metres.*

What I claim as my invention, and desire to secure by letters patent, is—the use of the four mercurial valve cups, as described, for filling and discharging alternately, the two measuring gasometers, as set forth.

I also claim the shaft *c*, in combination with the levers *B*, *e*, and pall *f*, for giving simultaneous movement to the hands of the dials, the valves, and the gasometers, as set forth.

JAS. LONG.

No. 7155.—*Improvement in the Spiral Spring Sash Stopper.*

What I claim as my invention, and desire to secure by letters patent, is—the combination with the ratchet and click, or any well known equivalent therefor, to arrest the action of the sash elevator, of the spring bolt (*B*), for fastening the sash, thereby giving double security against any disturbance of the position of the sash, substantially in the manner and for the purposes herein set forth.

WM. B. BARNARD.

No. 7156.—*Improvement in cutting Figures in Relief on Wood.*

Having thus described my invention, and exemplified the manner in which it may be carried into effect, I wish it to be distinctly understood, that I do not confine myself to the precise mechanical devices herein described for hold-



ing the material, for moving the carriages to and fro, for setting the cutters, or for holding the rack, teeth and blocks, but intend to vary them as circumstances may render expedient.

But what I claim as my invention, and desire to secure by letters patent, is the combination of an adjustable guide rack with an adjustable guide block, to produce the transverse, in combination with the longitudinal motion, for the purpose of producing on wood or other material, forms of a curvilinear, zig-zag, or mixed outline, substantially as herein set forth.

I likewise claim the device for effecting the reversal of the shifting lever, constructed and arranged substantially as herein set forth, and composed essentially of the adjustable stops (*g*), springs (*i*), dotents (*k*), vibrating frame (*F*), and wheels (*d'* *d''*).

J. H. BRUEN.

No. 7157.—*Fastening of Terrets in Harness Saddles.*

What I claim as my invention, and desire to secure by letters patent, is—the combination of an adjustable pad (*B*,) and a terret (*C*,) with each other, and with one of the legs (*A*,) of a harness saddle-tree, by means of a single point, so constructed that neither the pad or the terret can be turned on their axis from their proper positions, substantially as herein set forth, to wit: by means of a rectangular opening in each leg *A*, of the saddle-tree, with lugs *d*, *d*, descending from its sides for the reception of the shank *f*, of a terret *C*, and by the ears *e*, *e*, rising from the upper side of the pad (*B*,) that receive between them the end of the shank (*f*,) of the terret, through holes, in which ears and terret shank the rivet (*i*,) passes, and holds the three parts *A*, *B*, *C*, securely together.

PETER B. COOL.

No. 7158.—*Improvement in ventilating Railroad Cars.*

What I claim as my invention, and desire to secure by letters patent, is—the employment of jets of air produced, substantially in the manner herein set forth, for preventing the entrance of dust into railroad cars or carriages of any description.

JAMES CUNNINGHAM.

No. 7159.—*Improvement in Furnaces for heating Sad Irons.*

What I claim as my invention, and desire to secure by letters patent, is—combining with a portable furnace of the usual construction, a surrounding heating chamber, provided with apertures or slots to admit of the insertion or removal of the flaps combined with the door or flap at top, substantially as described.

I also claim providing the said air heating chamber with a revolving top, provided with a single small door or flap, which, by the rotation, may be brought directly over the slots in succession, and the flats inserted or removed, substantially as described.

JOHN T. DAVY.

No. 7160.—*Improvement in coloring Photographic Pictures.*

What I claim as my invention, and desire to secure by letters patent, is—the application to photographic pictures taken upon paper or upon any transparent or translucent medium, of the mode of coloring I have described, or any other substantially the same, and which will produce a similar effect.

A. C. DAYTON.



No. 7161.—*Improvements in Pumps for deep Wells.*

Having fully described my improvements in pumps, what I claim therein as new, and desire to secure by letters patent, is the combination of the pump barrel, having a valve as described, with the water chamber at the bottom, and the lever at the top, substantially as described, so as to raise the water by elevating and depressing the barrel, thereby dispensing with the ordinary piston and piston rod, and avoiding the inconveniences incident thereto.

NEHEMIAH DODGE.

No. 7162.—*Improvement in Machinery for making Pill Boxes.*

Having invented an automatic or self-directing machine of great value in the manufacture of boxes, and having herein before described the same, what therefore I claim as my invention, is as follows:

I lay no claim to the particular tools or reducing cutters used in cutting the wood of a stick, but what I do claim is the above described peculiar arrangement of two or more sets of reducing cutters applied to one carriage V, as above set forth, two or more sets of reducing cutters, applied to another carriage W, in a similar manner, feeding apparatus applied as above set forth, to each cutting apparatus, and two circular saws playing between and acting in concert with the adjacent opposite cutting apparatus of both carriages V, W, the whole operating together, substantially as above specified.

I also claim the combination of machinery by which each of the circular saws, or their puppet heads or carriages, are alternately moved, first in one direction, and next in the opposite direction, and on their supporting ways; the said machinery consisting of the arm  $o'$ , or  $p'$ , affixed to the upright shaft K, the slide  $t'$ , and its projecting pin applied to, and of the said arm, the grooved cam plate  $w'$ , the lever or arm  $r'$ , connecting rod  $s'$ , the pin  $c^2$  projecting from the under side of the carriage; and the springs  $a^2$ ;  $b^2$ , the whole being constructed and made to operate, substantially in the manner and for the purpose as therein before specified.

ASA FESSENDEN.

No. 7163.—*Cultivating Seed Planter.*

What we claim as our invention, and desire to secure by letters patent, is: The combination of the roller and the harrow for crushing and pulverizing the soil, with the cultivator teeth for forming the furrows and depositing the seed; the roller preceding the harrow, and both preceding the cultivator teeth, as herein set forth.

WM. FLORY.

GEO. A. GROOVE.

No. 7164.—*Improvement in Air Heating Stoves.*

Having thus fully, clearly, and exactly described the nature, construction, and operation of my invention in heating stoves, what I claim therein as new, and desire to secure by letters patent, is inserting the vessel ( $f$ ,) as described for throwing down jets of air directly upon the flames, and other results of combustion; the cylindrical vessel ( $f$ ,) being of lesser diameter than the drum ( $c$ ,) half way up, and within which it is placed, so that the flame and results of combustion are commingled with the jets of air, and more thoroughly consumed, and are also forced to lick the sides of the drum and thus cause the greatest possible radiation of heat. And in combination with the foregoing, I claim the pipe ( $d$ ,) with the enlargement ( $e$ ,) and the



reservoir (*h*,) as described, for carrying a column of air through a pipe led through the heart of the fire, this pipe being enlarged about the level of the top of the fire bowl, so as to throw jets of air athwart the direction of the downward jets before described, and this pipe being also continued up to a reservoir on the top of the drum, through perforations in the top of which air reservoir, jets of heated air, are continually thrown into the domestic or other apartment; by which general construction of this pipe, I effect a complete, commingling, consuming, and outward forcing of the results of combustion against the sides of the drum, and at the same time, furnish to the apartment an agent for heating and keeping up an active circulation of the atmosphere in the room to which heat is to be imparted.

P. GOODHUE.

No. 7165.—*Improvement in Regulators for Drawing Rollers.*

What I claim as my invention, and am desirous of securing by letters patent, is the combination of the tube B, lever D, D, weight C, jointed bar E, E, oscillating shaft F, and pinion G, gears H, I, M, screw shaft N, nut O, arms P, P, with their belt guides Q, Q, belt V, cones R, R, shaft K, and level gears 1, 2, 3, 4, 5, 6, for changing and regulating the speed of the rolls, for equalizing the drawing or making the sliver the required size, substantially in the manner described in the foregoing specification.

WHITING HAYDEN.

No. 7166.—*Improvement in Oil Presses.*

Having thus described the construction and operation of my improved press, what I claim therein as new, and desire to secure by letters patent, is:

First. The construction and arrangement of a series of press cases, substantially as herein set forth, each box forming or carrying the follower of the one next above it, and all being supported when not in action, at suitable distances apart by the offsets on the guides.

Second. The combination of the perforated lining plates, with the grooves or channels on the interior of the press cases, substantially as herein set forth.

EDWIN HILLS.

No. 7167.—*Improvement in Noddle Irons for Saw Mills.*

What I claim as my improvement in noddle irons for saw mills, and desire to secure by letters patent, is the combination of the four pointed knuckle, with indented straps and screw tie bolts, the whole constructed and arranged substantially in the manner, and for the purposes set forth.

GIDEON HOTCHKISS.

No. 7168.—*Improvements in Looms for Weaving Piled Fabrics.*

What I claim, therefore, as my invention, and desire to secure by letters patent, is the method of inserting the figuring wire (or wires) into the open shed, and withdrawing the same from under the woven file or loops by means of a carrier (or carriers) to which one end of the figuring wire (or wires) is (or are) attached, when the said carrier (or carriers) is so operated, substantially as herein described, as to receive a motion from and towards the selvage of the fabric, to withdraw and insert the wire,—and towards and from the lay to carry the wire to the open shed, and when inserted back against the woven part of the fabric, all substantially as herein described.



I also claim combining with each carrier and figuring wire, a guide or support through which the wire passes, substantially as described, when the said guide receives a motion towards and from the lay in unison with the carrier, substantially as described. I also claim forming each range of figuring loops on two wires introduced from opposite sides, and over-lapping in the middle with the lapping ends champered or bevelled, substantially as described.

JOHN JOHNSON.

No. 7169.—*Improvement in Cast Iron Car Wheels.*

What I claim as my improvement, is the wheel, or combination of the arched support plate E, E, the curved spokes or arms F, F, and the curved plate C, C, with the solid or undivided hub and the chilled rim, all cast together, and in one piece, substantially as above specified.

LYMAN KINSLEY.

No. 7170.—*Improvement in Cast Iron Car Wheels.*

I am aware that a cast iron wheel with a hollow felloe, or made with two concentric rings connected at their sides, and having a space between them, was invented and patented, on about the 15th day of February, A. D, 1838, by one Henry R. Dunham. This wheel, however, had a series of straight spokes, and a split or divided hub, the hub being connected to the felloe by such spokes only. I do not claim as my invention, such wheel or any part thereof, although it was able to resist vertical blows or shocks, better than a wheel having a solid or single rim felloe, as usually made, it has not the requisite power or strength to resist the lateral strains against the flanch of its tread. Nor could it be cast in one piece, and with a solid or undivided hub and chilled rim.

What I do claim as my invention, is the wheel made with the chilled rim a hollow felloe, or a support plate E, extending around and within the chilled rim, a curved plate C, uniting the rim and hub, a series of curved arms F, F, F, &c., and an undivided or unsplit hub, all cast, or founded, and combined together in one piece, substantially in manner as above specified.

LYMAN KINSLEY.

No. 7171.—*Improvement in the Interior Arrangement of Steam Boilers.*

What I claim herein as new and of my invention, and desire to secure by letters patent, of the United States, is the troughs (i,) surmounting diaphragms (which separate the water space vertically, into as many isolated chambers,) and having sides which rise higher toward the outside, in order to collect such water as overflows, and to distribute it among the several parts when the boiler recoils.

SYLVANUS KNIGHT.

No. 7172.—*Improved Lever Lewis.*

And what I therefore claim as my invention, and desire to secure by letters patent, is attaching a bent lever having its foot resting against or hooking under one of the vertical sides of a stone, to that same vertical side of the stone, by any of the well known forms of lewis, substantially in the manner and for the purpose herein described.

THOMAS LIDGERWOOD.



No. 7173.—*Improvement in the Gauge for Water Casks.*

What I claim as my original invention, and desire to secure by letters patent, is the combination of the joints or rods E, E, with the piece A, C, D, scale F, and piece B, C, D, in the manner set forth.

JOHN MARQUART, Jr.

No. 7174.—*Improvement in Flouring Mills.*

Having thus described the manner in which I construct my improved flour bolting machine, and the operations thereof, what I claim therein as new, and desire to secure by letters patent, is the manner herein stated, in which I have arranged and combined the spouts *i, j, k, l*, and tubes *b1, b2, b3, b4, &c.*, and their slides *c, c, c, c, &c.*, with each other, and with the bottom of chest B, and with the boxed conveyers F, and L, by which complete control is obtained over the quality of the flour passed into the packing chest, and also to give a similar control over the quality and quantity of the flour carried from B, into L, to be returned through *f*, to the flour elevators, substantially as before described.

I claim the manner in which I have arranged and combined spouts *k, l*, pipes *b, b, &c.*, and their slides *c, c, c, &c.*, with each other, and with B, F, L, and M, and O, with F, and F, with G, and H, by which the flour and bran are mingled in any desired proportions, and passed together into H, so as to give complete control over the action and products of H, and to prevent the choking or filling up of the meshes of the bolting cloth, substantially as before described. I claim also the manner in which I have combined spout *d*, with the bottom of I, and top of L, and *g*, with the bottom of L, and the burrs, so as to pass to the burrs such portion of middlings as require regrinding, substantially as before described.

And while I do not claim as my invention, the separate parts of my bolting machinery, taken individually, I do claim as new, and of my invention, the manner of combining and arranging those parts, substantially as before described, so that entire control is given over the process of bolting, and it is made one entire and continuous action, and by machinery, by which any desired portion of the flour in the first bolting chest B, is passed through *i*, or through *i*, and *j*, into the packing chest; and any portion thereof passed through *k*, or *l*, into L, and thence through *f*, with the flour from I, through *e*, to the elevators, and any portion at the miller's discretion, passed through *b, b, &c.*, into F.

And the flour unbolted from M, the flour from *b, b, &c.*, and the bran from O, mingled and passed together in any proportions through G, into I, and H, and then thoroughly bolted and separated without any choking of the meshes of the bolt, the bran passed off through J, and the offal through *h*, in any required condition, the middling forced through *d*, into L, and from thence through *g*, to the burrs to be reground, while the flour is forced through *e*, into L, and meeting with the flour passed into L, from *l*, with it carried through *f*, to the flour elevators.

A. F. MENEFFEE.

No. 7175.—*Improvement in Abdominal Supporters.*

Having thus explained my invention, I claim this abdominal supporter, constructed with the bodice A, as described, in combination with the trunk hose D, in the manner described, or in any other manner, substantially the same for the purpose set forth.

MARY W. O'MEARA.



No. 7176.—*Improved Method of Operating Lock Bolts.*

What I claim as my invention, and desire to secure by letters patent, is operating by means of reciprocating slides, a vibrating lever provided with a bolt at one end, and projecting from the back face of the lock, substantially as described.

THOS. SLAUGHT.

No. 7177.—*Improvement in Brakes for Carriages.*

Having described my improvements, all that I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of the suspended toothed or notched bar K, staple N, spring-hook rod Q, connecting rod H, and plate O, for actuating and locking the rubbers against the peripheries of the wheels, and unlocking the same in passing over plains, by the action of the horses, as described and represented.

WILLIAM T. WELCH, Jr.

No. 7178.—*Machines for giving Increased Twist in Cutting Rifles.*

Having thus fully, clearly, and exactly described the nature, construction, and operation of our invention, what we claim therein as new, and desire to secure by letters patent, is the jointing the guide (*i, i, i, i,*) in combination with the chord piece (*w,*) for sustaining it in position (or their equivalents) for the purpose of giving the guide as bent, when operated upon by the aforesaid lugs, or screws, or their equivalents, a rocking motion; making the point of attachment to the traversing bar, or other similar contrivance, describe a curve with reference to the bed which traverses beneath, thereby compelling the point of attachment to the traversing bar, or its equivalent, to recede in a gradually increasing ratio, (accompanied by an equivalent increased velocity of the rotary head,) from the axis of the mandrel, for the purpose of producing an increasing or decreasing twist to the groove in the bore, after the manner substantially as herein described.

EDWIN WILLIAMS.

JAMES CULBERTSON.

No. 7179.—*Improved Method of Applying Fusible Metal to Boilers.*

Having thus described my protected safety fusible plug, what I claim therein as new, and desire to secure by letters patent, is inserting the fusible metal in a perforated cap which is protruded through, and screwed into any sheet of the fire or flue surface of the boiler, substantially as herein set forth, in such manner that the bottom of the cap is exposed directly to the action of the heat, the fusible metal within the cap closing the end of the tube through which the steam rushes, to give warning when the metal melts.

EDWARD H. ASHCROFT.

No. 7180.—*Improvement in Looms for weaving piled Fabrics.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Cutting the loops in the grooved wires as the cloth is woven, by means of a reciprocating knife, combined with the weaving parts of the power loom, and operated substantially as herein described.

Second. Combining with the reciprocating knife for cutting the loops, a take-up roller provided with cogs, which enter between the looping wires, substantially as herein described, for the purpose of presenting the ranges of loops in succession, and in a proper position to the action of the knife, as herein described.



Third. Combining with the reciprocating knife for cutting the loops, beveled or wedge formed guides placed near the selvage of the cloth, substantially as herein described, for guiding the knife at the commencement of the cut, as described.

Fourth. Combining with the reciprocating knife for cutting the loops, a trough into which the wires fall from the cut pile, and a second trough, into which they are successively transferred, substantially as herein described.

Fifth. Combining with the second trough, into which the wires are transferred, chains with projecting wings or spurs, substantially as herein described, for taking the wires in succession from the said trough, and transferring them to a wire box attached to the lay, substantially as herein described.

And lastly. Guiding and supporting the looping wires as they are introduced under the warps by means of slots or notches in the dents, substantially as herein described.

MERTOUN C. BRYANT.

No. 7181.—*Improvement in Machines for planing Ornamental Mouldings.*

I do not claim to have invented or improved upon any plan of a planing machine whatever, neither do I claim to be the inventor of any plan of a machine for forming ornamental mouldings by a scraping process in which only one gauge and one scraper are used in combination with a tool frame or carriage, which has only a vertical motion.

But what I do claim, and desire to secure by letters patent, is the method of using two scrapers, one in advance of the other, in combination with a single gauge.

I also claim the method of using the universal joint, in combination with the swivel carriage and two gauges, the same being constructed, arranged and operated essentially as above set forth and described.

JOHN B. H. CHATAIN.

No. 7182.—*Improvement in Machines for making Hat Bodies.*

What we claim as our improvement, and desire to secure by letters patent, is the combination of the rotating brush for throwing the fibres, with the cards which take the fibres from the feed rollers, and separate and prepare them, and with the trunk which guides, and the exhausted former on which the fibres are deposited, substantially as herein described.

EDWARD F. CONDIT.

ALFRED TAYLOR.

No. 7183.—*Improvement in Weighing Frames.*

What I claim as my invention, and desire to secure by letters patent, is—the manner of constructing the portable frame for the scale beam, as set forth, said frame consisting essentially of the hinged beam *c*, moveable standard *e*, and platform *a*, these parts being arranged and combined, substantially as set forth.

CHARLES DOWNER.

No. 7184.—*Improved Apparatus for Trimming Vessels.*

What I claim as my invention, and desire to secure by letters patent, is—the herein described method of trimming vessels by means of a shifting weight operated by an adjustable cradle, substantially as herein set forth.

E. L. EVANS.



No. 7185.—*Improvement in Tools for preparing Hubs for Boxes.*

Having thus described the construction and operation of my improved hub excavator, what I claim as my invention, and desire to secure by letters patent, is the construction of the implement or tool above described and represented by the accompanying drawings, for excavating or cutting out the ends of hubs of carriage and other wheels by hand, for the reception of the ordinary wheel boxes and linch pins, the cutter P P', being made to recede from the centre of the hub simultaneously with the operation of cutting the excavation in concentric circles, by the combined and simultaneous action of the screw G, and nut H, in connection with the recessed bar A, and handles B, B, transverse bar J, and box N, arranged and operating in the manner and for the purpose set forth.

SAMUEL FAHRNEY.

No. 7186.—*Improvement in Abdominal Supporters.*

What I claim as my invention, and desire to secure by letters patent, is—two short elastic arms S shaped, connected with other parts of a supporter, with a pad upon each end, one pad to rest upon the short ribs behind the curve and free from the spine, while the other rests upon the flat plate of the os illium, each S plate being united at the middle to a long elastic arm, by a mortise allowing no motion but that of sliding in and out; the long arm and short arm always crossing at right angles through the mortise.

Secondly. I claim the invention of two long elastic arms, in connection with other parts of a supporter, and with the S shaped arms, by a mortise and screw bolts; these arms so cut as when laid upon a flat surface, that the edge will be convex, then concave, and then straight, and formed so as to set flat upon the person, rising above the hips with a point of rest about one-third of its length from the back, and falling down in front to a pad, and by so adjusting the shape of the arms and point of rest, as to press directly upon the hernial rings, and lift up the abdominal contents toward the top of the hips.

Thirdly. A supporter pad so formed as to be thicker on the inside, near its lower and outer edge at the point of termination or lower fastening to it, of the long elastic arms, so as to press directly on the hernial rings, the lower outer edges being cut so as to follow the course of the grain, and the lower edge yoked or cut convex, to go above the os pubes, thus acting upon all those parts occupied by the abdominal rings.

S. S. FITCH.

No. 7187.—*Improvement in Seed Planters.*

I claim the levers constructed with their ends *k*, in the manner substantially as described, to prevent the slides from being actuated when the motion of the wheel is reversed.

JOHN P. GROSHEN.

No. 7188.—*Improvement in Hoisting Machines.*

What I claim as my invention, and desire to secure by letters patent, is—the twist break, whether constructed as set forth, or in any other way, substantially the same, and whatever the nature or purpose of the machine to which it may be attached.

SANDY HARRIS.

No. 7189.—*Process of rolling India Rubber Cloth.*

What we do claim is the new or improved process of applying and fixing rubber to cloth by means of rollers; the said improved process being a com-



combination of the method of spreading the rubber by the pressure of rollers, and the method of grinding and fixing it at the same time, against and into the substance of the cloth, all as specified.

FRANCIS D. HAYWARD.

JOHN C. BICKFORD.

No. 7190.—*Improved method of employing the Exhaust Steam.*

What I claim as my invention, and desire to secure by letters patent, is—the running the exhaust pipe into the main steam pipe, curving it, and providing it with an aperture and valve, substantially as herein described, by which the current of steam from the boiler has a tendency to open the valve at intervals, and draw into the steam pipe a portion of the exhaust steam.

GEO. H. HOAGLAND.

No. 7191.—*Improvement in Cooking Stoves.*

What I claim therein as new, and desire to secure by letters patent, is—making the front part of what is usually an open flue under the oven, to consist of a hot air chamber (*d*,) as described, and the rear part of the same; and also the space at the back of the oven to consist of reverting flues, by compelling the draft to pass over the top of the oven down back corner diving flues, reaching from top to bottom of the stove, and then lick under the oven and around the division plate, between these diving flues and the discharge flue; thus prolonging the contact of the heat with the back vertical and horizontal positions of the oven; and equalizing the distribution of the heat and flame, so as to make the oven look well from all directions.

HOSEA H. HUNTLEY.

No. 7192.—*Improved Beaters in Hide Handling Cylinders.*

What I claim as new and of my invention, and desire to secure by letters patent, is:—

First. The wheel having buckets diagonally across the surface, alternately from right to left, and left to right.

Second. The rollers or slats in combination with the chamber, substantially in the manner and for the purpose set forth.

JAMES R. INNIS.

No. 7193.—*Improvement in Double Oven Cooking Stoves.*

1. What I claim as my invention, and desire to secure by letters patent, is the moveable flue (*i*,) for dividing the oven into two parts, as above specified.

2. I also claim, forming an aperture in the division plate (*a*,) between the front boilers, to protect it from the intense heat of the fire, and to supply air for combustion as described.

JAMES M'GREGOR, JR.

No. 7194.—*Improved Centrifugal Propeller.*

What I claim, therefore, as my invention, and desire to secure by letters patent, is—the peculiar curve given to the propeller blades as herein set forth, to counteract the tendency of the centrifugal force to deflect the issuing water, obliquely to the axis of the propeller.

JOHN WILLIAM NYSTROM.

No. 7195.—*Improved method of forming Sheet Metal Tubes.*

What we claim as our invention, and desire to secure by letters patent, is



the method of forming sheet metal tubes, &c. upon a mandrel, supported by and obtaining its revolution from these rollers, one (or more) of which are adjustable, substantially in the manner herein described.

WM. OSTRANDER.

WM. WEBSTER.

No. 7196.—*Use of the Oxide of Tin in the Manufacture of India Rubber.*

Having described the nature of my invention, together with the best mode of manufacturing the same, I hereby declare, that I do not claim the combining of ochres, or pipe clay with India rubber, nor submitting rubber to high heat, nor mixing sulphur with rubber.

What I do claim as my invention, and desire to secure by letters patent, is the combining rubber with tin as set forth, and the combination of these with sulphur and heat; whereby, I produce a fabric having a black surface, and which is capable of withstanding all the elements which distinguish vulcanized from other preparations of rubber.

JOHN PRIDHAM.

No. 7197.—*Improvement in Steering Apparatus.*

I am aware, that a screw placed athwart ships, and acting upon a turning and travelling nut, attached directly to the tiller or its equivalent on the rudder head, has been employed for the purpose of steering vessels; I therefore, do not claim the invention of that arrangement.

In my apparatus, I introduce the lever, fig. 4, for the purpose of moving the rudder with the same length of tiller through a given space, with less turns of the wheel, than can be done in any other way with the same pitch of screw, by which I obviate a great objection in former apparatus for steering. To wit: the want of command over the rudder, by reason of the great numbers of turns of the wheel, or the great friction produced by increasing the pitch of the screw. These being the only two modes used by former inventors for obtaining this velocity in the improvement of the rudder, to wit: shortening the tiller, or increasing the pitch of the screw. In my apparatus any required velocity in the movement of the rudder may be obtained with the same length of the tiller, by diminishing or increasing the length of my lever, without increasing the pitch of the screw, as increasing the pitch of the screw, or shortening the tiller, makes it operate stiffly and unnaturally. And in fact, I am enabled by the introduction of the lever, to obtain that particular combination of power and velocity which the exigency of all occasions may demand in an apparatus for steering vessels.

Therefore, what I claim as my invention, and desire to secure by letters patent, is attaching the nut acted upon by the screw to an interposing lever arranged substantially as herein described, by which arrangement I am enabled with the same pitch of screw, and the same number of revolutions of the wheel, to move the rudder through a larger arc than in the old apparatus.

P. P. QUIMBY.

No. 7198.—*Improvement in Pumps for Ships, &c.*

What I claim as my invention, and desire to secure by letters patent, is—combining the pump barrel of suction pumps, in which are placed the check or stop valve and the piston, with the supply pipe or pipes, by means of an exhaust chamber into which the water flows by atmospheric pressure, and



from which it runs by gravity into the pump barrel, substantially as and for the purpose specified.

I also claim, in the combination next above specified, making a lateral hole through the pump barrel, and communicating with the exhaust chamber, substantially in the manner and for the purpose specified.

I also claim combining with the exhaust chamber, which unites the pump barrel and the supply pipes, and interposed between these, a strainer, sieve or filter, substantially as described, and for the purpose specified.

FRANKLIN RANSOM.

No. 7199.—*Improvement in Churn Dashers.*

What I claim in the foregoing as my invention, and desire to secure by letters patent, is the combination of the whirls with the revolving frame dasher; the several members being arranged and constructed substantially in the manner herein set forth.

NATHANIEL ROUTZAHN.

No. 7200.—*Improved movement of the Pointing Dies in Spike Machines.*

Having thus described my improvements, I shall state my claims as follows:

What I claim as my invention, and desire to have secured to me by letters patent, is operating the curved dies for pointing a spike, by setting them in the adjacent ends of two sets of toggles arranged with the cam projections  $o'$ ,  $p'$ , and guiding blocks  $q'$ ,  $r'$ , and the whole operating, substantially as herein above described.

EDMUND SAWYER.

No. 7201.—*Improvement in Machines for Sawing Marble.*

What I claim as my invention, is as follows, that is to say: I claim the combination of mechanism applied to the sprocket wheels, endless chain, windlasses and suspension chains of the saw frame: the said combination being for the purpose of gradually lowering the gang of saws in the proportion required, as the sawing process progresses. This combination consists of the train of mechanism which is applied to the lower sprocket wheel shaft, or axle  $b$ , and the driving shaft, and intervenes between the two, and is actuated by the revolutions of the driving shaft; said train of mechanism consisting of the tooth gear  $a$ , pinion  $c$ , gear wheel  $e$ , endless screw  $f$ , beveled wheel  $h$ , pinion  $i$ , and ratchet wheel  $l$ , together with the pawl  $x'$ , arm  $m$ , connecting rod  $n$ , slotted plate  $o$ , rocker shaft  $p$ , crank  $q$ , screw  $t$ , screw nut  $u$ , washers  $v$ ,  $w$ , cranks  $x$ , and  $z$ , and connecting rod  $y$ , as above specified; not meaning to claim as any part of the same, the crank  $l'$ , click  $k'$ , and ratchet wheel  $i'$ , except in their combination therewith, and for the purpose of enabling a person to raise or lower the gang of saws, by applying his hand to the crank, it being understood, that, when these last contrivances are not used, the wheel  $e$ , must be firmly fixed to its axis and not placed loosely thereon, as it is when such contrivances are employed.

I also claim the employment of the two arms  $f'$ ,  $g'$ , extended in opposite directions, above and below their rocker shaft  $p$ , and used in the manner and for the purpose as specified.

I also claim the vibratory tubular watering apparatus  $m'$ ,  $n'$ ,  $o'$ ,  $p'$ , and mechanism combined with it, said mechanism consisting of connecting rod  $p2$ , pulley  $q$ , endless band  $r'$ , and pulley  $s'$ , for giving to it, a reciprocating movement over the gang of saws and stone as specified.

ALBERT H. TINGLEY.



No. 7202.—*Improvement in Cast Iron Car Wheels.*

I do not claim, that the invention above described, is an improvement in the form of any part of railroad wheels, than that contained between the hub and the rim. But what I do claim as my invention, and desire to secure by letters patent, is the projecting ribs, in combination with the corrugated disk, in the manner and for the purposes herein set forth.

ASA WHITNEY.

No. 7203.—*Blind Slat Operator.*

I do not claim the construction of the bevel wheels, or the moveable joint as my invention, as they have been heretofore used and are old devices, nor do I wish to confine myself to the precise mechanical arrangement herein specified, as slight alterations may be made therein, without varying the principle of my invention.

What I claim, is the combination of the bevel wheels, and the moveable joint, essentially in the manner and for the purposes herein described.

DAVID R. WILLIAMS.

No. 7204.—*Improvement in Artificial Legs.*

Having described the nature, character, and action of my artificial leg, what I claim as my invention, and desire to have secured to me in this application, is the exclusive privilege of making artificial skeleton legs of thin metallic ribs or plates, and rings or hoops united together by rivets, or other suitable fastenings, substantially in the manner herein set forth, irrespective of any particular combination with other parts connected therewith.

GEO. W. YERGER.

No. 7205.—*Improvement in Apparatus for receiving and transferring to the pile sheets of paper from Printing Presses and Paper Machines.*

I claim and desire to secure by letters patent, the above described device, viz: the cylinder  $c'c'$ ,  $cc$ , in combination with the rollers  $a$ ,  $a$ , and the bands marked  $o$ , or any device, substantially the same, (the above named "fly" not being included) for receiving the printed sheets from printing machines or printing presses, upon a curved or cylindrical surface, and by means of said curved or cylindrical surface, transferring them with their printed sides upwards, to the pile, or the table provided to receive them.

I also claim the device embodied in the combination, consisting of the screws  $l$ ,  $l$ , the pawl  $m$ ,  $m$ , the lever  $n$ , the part  $h'$ , the click  $p$ , the wheels  $r$ ,  $r$ ,  $r'$ , and the tables  $d$ ,  $d$ , or any device, substantially the same, for lowering the pile of sheets, the accumulation of sheets upon said pile governing the operation as aforesaid.

ISAAC ADAMS.

No. 7206.—*Improvement in Brick Presses.*

What I claim therein as new, and for which I desire to secure letters patent, is:

First. The employment of the mounted roller ( $a$ ,) turning independent of the wheels on which it is borne, and forming a guiding carriage for the moulds, substantially in the manner, and for the purpose set forth.

I also claim the stop or weighted catch-lever, for guiding the moulds in entering under the grating.

COLLINS B. BAKER.



No. 7207.—*Improvement in Balloons and their Appendages.*

I would have it understood, that I do not confine myself to the precise details herein set forth; but what I claim as my invention, and desire to be protected under letters patent, is the application of one or more flexible partitions which I have termed the "septum membrane," to balloons for the purpose herein before described.

Secondly. I claim the application of a rotary motion, in conjunction with a hinge motion, for the purpose of producing motion in the fan or blade forming the tail, which motion is more or less assimilated to that of a bird's tail, in order to effect the steerage, substantially in the manner herein described.

Thirdly. I claim the use of the water grapnel for the purpose of arresting the motion of aerial machines, and also the application of elastic ropes to grapnels, either for land or water, and which elastic ropes may be formed entirely of elastic material, or by introducing some elastic material, or metal spring in its length.

And lastly. I claim the construction of the valve shown in figs. 3, 4, 5, sheet 2, as applied to balloons, in which the valve or plate during its motion, retains a position parallel to its seat.

HUGH BELL.

No. 7208.—*Improvement in Filters.*

What I claim therein as new, and for which I desire to secure letters patent, is the construction and arrangement of the filter with a woollen woven fabric wound on to a spool, substantially as herein set forth, and, admitting the water so as to pass down through the cloth presented edgeways, as above fully described.

CHAS. D. BIRDSEYE.

No. 7209.—*Method of connecting the Sections of Gold Washers.*

I do not claim the constructing of gold washers in sections, neither the connecting of said sections together by hinges; but what I claim as my invention, and desire to secure by letters patent, is the mode of connecting and holding firmly together said sections, by means of the strip of iron (J,) the rods (K, K,) the socket (L,) and the chain (T,) substantially in the manner and for the purpose above set forth.

RUSSEL BARTON.

No. 7210.—*Improvement in Exercising Chairs.*

What I claim therein as new, and desire to secure by letters patent, is connecting the moveable apron and back by means of adjustable arms, substantially as herein set forth, whereby the back and legs of the sitter can be so equally balanced that he can rock himself to and fro with the slightest exertion.

I also claim the adjustable self-adjusting foot-board, in combination with the moveable apron, substantially in the manner and for the purpose set forth.

SOLOMON CHAPIN.

No. 7211.—*Improvement in Blast Pipes for conveying Heated air and Gases to Furnaces.*

What I claim as my invention, applicable to heating and smelting operations, and which I desire to secure by letters patent, is the application of this method of creating such draught or partial vacuum, to the return of the smoke



and other escaping products of combustion to the fire, in order that such of them as are combustible may be there consumed, the method or means consisting, substantially, in the manner of employing the blast pipe F, enclosing the hot air pipe E, as herein set forth.

RANSOM COOK.

No. 7212.—*Improvement in Bee Moth Traps.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the fluted roller, operated as described, with the moth entrance of the bee hive to act as a moth catcher and killer, substantially in the manner and for the purpose described.

GEORGE FLETCHER, SEN.

No. 7213.—*Improvement in Seed Planters.*

What we claim as new, and desire to secure by letters patent, is—

First. The introduction of a cleaning rod, operated as described, into the hollow share of a seed planter, for the purpose of removing extraneous matters that may have entered the orifice, tending to impair or prevent the action of the machine.

GEORGE FLETCHER, SEN.

TURNER BARNES.

No. 7214.—*Compound Hard and Soft Metal Packing.*

What I claim as my invention, and desire to secure by letters patent, is the compound metallic packing ring constructed of hard and soft metals, substantially as herein set forth, the hard rings being for the purpose of preventing the substance of the softer from squeezing out around the follower and flange of the piston.

A. FULTON.

No. 7215.—*Improvement in Printing Presses.*

What I claim as new and useful in the above described improvements, and desire to secure by letters patent, is first, the peculiar manner of constructing the nippers, so that their upper surface shall be even with the surface of the paper, and their inclined or curved surface shall incline away from the surface of said paper.

I also claim an adjustable table, to be adjusted to the nippers, the nippers being first adjusted to the type or form, substantially as above set forth and described.

I further claim a frisket operated on by the motion of the carriage, so that when the carriage goes in with the sheet its forward end shall raise under and support the paper, and (from the upward pressure of the nipper<sup>2</sup> against the platen in giving the impression) grip it firmly and relieve it from the type after the impression is given, and on the receding of the carriage with the printed sheet, its forward end shall lower and allow the said sheet, which rests upon it, to slide or fall off into a box or drawer placed to receive it, operating substantially as above described.

I further claim the application of the vibratory power to the handle of a distributing roller, (see figs. 1 and 2) (said handle projecting from the frame of said roller midway from its respective ends) and not to the end of the roller frame, as in general use.

I further claim the combination and arrangement for opening the nippers when the carriage moves out with the printed sheet, and closing them just



previous to its going in, which combination consists of the horizontal bars or polls *y*, (see figs. 3 and 4) the curved pieces *a'*, the lever *c'*, attached to the shaft *b'*, (see fig. 9) the hub *d'*, with its projection *e'*, on the main shaft *J*, and the spiral spring *y*, one end of which is attached to the press frame; the whole being arranged and operating together, substantially in the manner herein above set forth and described.

GEO. P. GORDON.

No. 7216.—*Improvement in Correcting Magnetic Needles.*

What I claim as my invention, and desire to secure by letters patent, is the method herein described of producing perfect harmony and coincidence between the axis of a magnetic needle and the magnetic axis; and also of producing perfect harmony between any number of magnetic needles, to wit:—removing portions from the needle, whether by the formation of channels upon the upper or lower surface of the needles, of the form and in the position, substantially as herein set forth, or merely by grinding, or filing, or cutting away.

CALVIN GUITEAU.

No. 7217.—*Improvement in Fountain Pens.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the moveable spring tongue, with the pen, (for the purpose of forming a fountain pen) when the whole is constructed, arranged, and combined, substantially as herein described.

ELLSWORTH H. HYDE.  
ROLLIN L. DAWSON.

No. 7218.—*Improvements in Revolving Breech Fire-arms.*

I therefore claim as new and of my own invention, and desire to secure by letters patent of the United States, first, the arrangement of the arm *k*, slides *l* and *m*, or their equivalents, whereby the motion of half-cocking and cocking the hammer is communicated to the barrel, to open the joint formed by the grooves *v*, around the breech *w*, and also to close said joint on the discharge of the piece by the operation of the hammer<sup>c</sup>, slides *l* and *m*, and spring<sup>1 3</sup>, alone or in conjunction with the main spring *g*, substantially as described and shown.

Second. I claim the arrangement of the slide *q*, and circular ratchet *s*, or their equivalents, whereby the motion of the barrel sliding forward, is made to revolve the chambers the required amount, to bring the next chamber in line for the next discharge of the piece, substantially as described and shown.

H. IVERSON.

No. 7219.—*Machines for Forming Rotary Cutters.*

What I claim as of my own invention, and for which I desire letters patent of the United States, is the arrangement upon puppet heads having a sliding motion upon a bed plate, of adjustable slides, supporting disks, to which are attached the boxes in which the cutter shafts revolve, the disks being capable by means of vibratory motion on their axis, of adjusting the cutter shafts to any required angle with the horizon, and the whole machine being for the purpose of shaping at the same time, both faces of a revolving cutter, substantially as herein described.

ANDREW JENNINGS.



No. 7220.—*Improvement in Cultivator Teeth.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The manner of constructing the cultivator tooth, substantially as above described, by which a separate steel cutter is embraced between the two halves of the tooth, removable at pleasure, and by which wedges can be applied against the shoulders of the tooth and the under side of the beam, for the purpose of changing the angle of inclination of the share, in order to increase or diminish the depth of culture, the tooth turning on the bolt passing through the head of the same, and the beam, whilst inserting the wedges, the wings of the tooth being secured to the four-sided changeable share, by means of screws and nuts or other equivalent means.

LEWIS LAMBORN.

No. 7221.—*Improvement in Printing Floor Oil Cloth.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the stops G, H, I, J, K, with the block E, by which the printing of the floor oil cloth is performed, without moving the stops until the first printing is finished, and dispensing with a second block to cover the parts of the cloth not printed at the first operation, by simply changing the position of the hinged gauges on the block without moving the stops on the bar as above described, thus dispensing with the second block usually employed.

LEVERETT MOORE.

No. 7222.—*Improvement in Thrashing Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is the mode of cutting and thrashing the grain by forcing the same against the knife (*k*), and after being cut, between the teeth of the concave D, and the teeth of the gathering or thrashing wheel or shaft, of bars or beaters (*i*), during the progress of the machine, as herein set forth.

SAMUEL S. REMBERT.

No. 7223.—*Improvement in Plough and Clevis.*

What I claim and desire to secure by letters patent, is—

First. Making the reversible point F, with the triangular shoulders F', F'', in combination with the screws *f'*, and nut N, for binding firmly together the land side E, mould board C, cutter G, and share H, as well as securing itself, in the manner herein fully described.

Second. I claim the device of fastening the reversible share to the flange on the lower part of the mould board, substantially as set forth.

Third. I also claim the manner of employing the inclined brace rod I, in combination with the box plate P, cast on the inside of the mould board, for adjusting the beam, to take more or less land, to act as a substitute for the clevis, and at the same time to brace or stiffen the wood work of the plough by attaching it to the cast iron mould board and land side, as described.

IRA REYNOLDS.

No. 7224.—*Improvement in Dental and Surgical Chairs.*

What I claim as my invention, and desire to secure by letters patent, is the application to chairs of the middle section B, B, substantially as herein described, whether operated by rack and gear, or by lever, or windlass, or screw,



at two corners of the chair or at four, or at any intermediate point, provided the same results are obtained, by means substantially herein set forth.

FLAVIUS SEARLE.

No. 7225.—*Improvement in Cheese Presses.*

What I claim as my invention, and desire to secure by letters patent, is combining with cheese presses, two beds upon which the cheese is alternately pressed, which revolves together on a horizontal axis, substantially in the manner and for the purpose herein set forth.

AUGUSTUS N. SEVERANCE.

No. 7226.—*Improved Method of Dressing Cut Tobacco.*

What I claim as of my invention, and desire to secure by letters patent, is the method of dressing cut tobacco, by passing it through a revolving cylinder, having holes through it, to sift the short from the long pieces, and with hooks or pegs projecting from its inner surface towards the centre, for lifting the threads of tobacco, as described above.

GIDEON WALES.

No. 7227.—*Improvement in the Seed Roller of a Seed Planter.*

What I claim as my invention, and desire to secure by letters patent, is the before described mode of constructing the planting cylinder D, by which the cavities or cells M, in the periphery are enlarged or diminished, simultaneously by simply turning the plate (o,) or other similar device, having its section P, of male screws on its inner face, and causing said sections to act on all of the radial slides Q, forming the bottoms of the cavities at the same time, and holding them firmly in the required positions by the thumb screw i, or other equivalent mechanical device, substantially as aforesaid, by which like results are produced.

EDWARD WICKS.

No. 7228.—*Improvement in Printing Floor Oil Cloth.*

But what I do claim as my invention, and desire to secure by letters patent, is the employment of the before described combination of the gauge A, and stops C, constructed, arranged, and operated in the manner and for the purpose above set forth, for guiding the printing block without the use of pitch pine, during the operation of stamping the colors on the cloth, by which the work is rendered much more accurate, and is executed with greater despatch, and is not so liable to become blurred during the operation of handling the blocks, nor of having the colors to overlap, by a misplacement of the blocks.

N. B. POWERS.

No. 7229.—*Clamp to be used in the Manufacture of Wrought Iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is the construction and application of the above described combined cylindrical clamp, consisting of the following parts—namely, the ring A, A<sup>2</sup>, of an L shaped section with handles (a, a,) attached, and ring D, and screw bolts E, applied for the purpose of confining and holding the wrought iron arms B, or spokes, in a true circle, together with the pieces c, d, e, in the centre to form the hub during the operation of welding the several parts together, as above described.

HERRICK AIKEN.



No. 7230.—*Improvement in Machines for Hoisting.*

What I claim as my invention in the above described machine, and desire to secure by letters patent, is the separate and independent action, each upon its own axis, of the two upper pulleys whereby the buckets or weights are suffered to pass freely between them, without let or hindrance, and in combination therewith, I claim also the swinging of the buckets or weights, between the chains, so that they shall always hang downward, in whatever position the parts of the chains to which they are attached may be.

WILLIAM C. ALLISON.

No. 7231.—*Improvement in Cooking Ranges and Heating Air.*

But what I do claim, is the employment and use of the combination of the furnace and oven, in the hot air chamber, with the radiating pipes E, flues and dampers D, and I, and H, J, K, and F, for the purpose, substantially as herein above set forth.

ELIAS T. BEERS.

No. 7232.—*Improvement in Chimney Caps.*

What I claim as new, is the injector G, in its combination with the cap plate C, tube A, and frustum B, and made stationary against the cap plate, all substantially as herein before specified; and in combination with the cap plate C, the frustum B, and tube A, I claim one or more flat plates or rain fenders E, as applied and used, substantially in the manner as herein before explained.

MICHAEL HENNY COLLINS.

No. 7233.—*Improvement in Churns.*

What I claim as new therein, and for which I desire to secure letters patent, is first, the self-adjustable float or slat (C,) which opens when churning the cream, and closes of itself when the dasher is turned in the opposite direction, to gather the butter, as before described.

R. W. DAVIS.

No. 7234.—*Improvements in Saw Mills.*

What I claim as my invention, and for which I solicit letters patent, is—

First. The combination and arrangement of levers T, U, V, X, (n,) with the catch bar W, and cam (m,) and sliding bar (p,) by which the depression of the foot lever V, is made to actuate the several levers T, U, X, (n,) and the cam (m,) made to lift the lever (n,) and thus operate the turning bar (q,) and with the gauge bars (s, s,) and thus set the log, and at the same operation elevate the foot lever V, and engage the reaching arm R, with the rag wheel Q, to feed the carriage forward, as described and represented.

Second. I also claim the combination of the upright gauge, turning bars (s, s,) with the horizontal weighted turning bar (q,) holding bars (v, v,) and eccentrics (w, w,) thereon, by which the log is set simultaneously at both ends, and the slides K', and L', prevented from moving, during the operation of sawing, by the holding bars (v, v,) as described and set forth.

Third. I also claim the arrangement of the shaft V, and pinion Z, for engaging with the rack of the carriage, simultaneously with the descent of the foot lever, for winding up a cord and weight, for relieving the tightening lever from the band G, and unwinding the same with the ascent of the foot



lever V, after the setting of the log, and gigging back of the carriage, to give motion to the crank shaft C, as described and set forth.

WEIGHTMAN DAVIS.

No. 7235.—*Improvement in Harness Hames.*

I will now claim, firstly, curving or inclining forward the upper and lower parts of the back or drawing surface, and the inner projecting edge of the hame, substantially in the manner and for the purpose herein described.

Secondly. The stock *k*, of the draught iron for securing the same to the hame, by means of the shank *f*, of the breast ring, passing through the said stock *k*, of the draught iron, and rivetted to the hame, as described.

Thirdly. The hook studs B, B, B, for receiving the straps which secure the upper ends of the hames together, when on the horse, so as to allow the straps to be easily shifted, constructed in the manner described, or in any other way, substantially the same.

ANDREW DEITZ.

No. 7236.—*Improved Atmospheric Churn.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the dasher with the stationary inclined air channels, on the churn tub, the two being made, arranged, and operating, substantially as herein set forth.

SIMEON F. EMERSON.

No. 7237.—*Improvement in Temples used in Weaving Double Cloth.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the jointed rods with the wheels or pulleys at the ends of the rods.

I also claim the wires fastened at one end to the bars or rods, and having the other end bent at such an angle as to enter a slot in or upon the breast beam, for the purpose of retaining the temple in a proper position.

I also claim the slot in or upon the breast beam, when the same is used in connection with the temple, as herein described.

STEPHEN EVERETT.

No. 7238.—*Improved Pocket Filtering and Drinking Tube.*

What I claim as my invention, and desire to secure by letters patent, is the fitting a filter to a tube of greater or less length, substantially in the manner herein before set forth, so that water may be strained by the very act of drinking.

ABIJAH FESSENDEN.

No. 7239.—*Improvement in Parlor Air heating Stoves.*

What I do claim as my invention, and desire to have secured to me by letters patent, is the combination of the cold air chamber L, and valve M, with the hot air annular chamber H, and the reservoir or chamber B, below the horizontal plate E, in the chimney flue, and behind the recessed fire-board A, as described, said chamber L, being provided with an opening R, to let the cold air into the annular hot air chamber H, and small openings N, to let a portion of the cold air into the reservoir B, and the valve M.

I likewise claim the combination of the hinged water holders J, with the recessed fire-board, said holders serving the double purpose of evaporator,



stands and valves, as described, for moistening the air and admitting warm air from the reservoir or space B, behind the fire-board, or directly into the parlors.

I also claim the arrangement of the valves P, in the segmental top of the fire-board, as described, for letting the warm air from the recess of the fire-board into the reservoir B, to be conveyed thence wherever described.

L. W. GOSNELL.

No. 7240.—*Improved Sash Stopper.*

What I claim therein as my invention, and for which I desire letters patent, is the arrangement, substantially as herein described and represented, in one compact and connected mechanism of a pair of oppositely acting eccentric tumblers, held in contact with the jamb, by a single spring, or its equivalent, and both operated by the same key or other usual substitute, and so disposed and constructed as to oppose any attempt (except by one who has control of the catch) to either raise or lower the sash from the position in which it may be placed.

GEORGE H. GRAY, SEN.

No. 7241.—*Construction of Drill Teeth in Seed Planters.*

What I claim therein as new, and desire to secure by letters patent, is the spring coupling, constructed and arranged, substantially as set forth.

LEVI HAVERSTICKE.

No. 7242.—*Improved attachment of the Forge Hammer to its Helve.*

What I claim as my invention, and desire to secure by letters patent, is—limiting the depth of that portion of the hole in the helve, which receives the shank of the hammer, and at the same time, making the crown A', solid, excepting a hole of sufficient size through the same, to admit of a punch, substantially in the manner and for the purposes herein described.

DANIEL HICKS.

No. 7243.—*Improved Oscillating Self-adjusting Railroad Frog.*

What I do claim as new, and my invention, desiring to secure the same by letters patent, is a railroad frog, constructed, applied, and operating essentially in the manner, and only for the purpose herein set forth.

J. W. HOFFMAN.

No. 7244.—*Improved Revolving Plate and Tumbler Lock.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of a series of permutation plates in a line, and on the same axis of motion, each having a central hole for the reception of the entire key, and a projecting tongue for the key to act upon, and a recess or recesses on the periphery, for the reception of the tumbler; but this I only claim in combination with a tumbler attached to and rotating with the cylinder, substantially as herein described.

I also claim making the recesses of the key plates (or the equivalent thereof,) of different lengths, but all starting from the same line, substantially as herein described, to facilitate the insertion and removal of the key as described.

I also claim the cylinder which contains the permutation plates, and which carries the tumbler as above described, in combination with the permanent flanch enclosing the same, and having a recess to receive and hold the tum-



bler when thrown out, substantially as described. And finally, I claim the arrangement of the eccentric for throwing the bolt with the rotating cylinder, carrying the tumbler, and containing the permutation plates, as described.

L. JENNINGS.

No. 7245.—*Improvement in Agitating Coal Grates.*

What I claim in the above described stove as new, and desire to secure by letters patent, is giving the compound vertical and horizontal oscillating motion to the grate bars, as herein set forth.

ABEL KEENEY.

No. 7246.—*Improved Blind and Shutter Opener and Fastener.*

What we claim as our invention, and desire to secure by letters patent, is the opening and closing of window blinds, and retaining them when open or closed, by means of the rotary opener B, (which is circular at its centre, and gradually enlarges into scroll-shaped extremities, having a groove *f*, in its surface, extending spirally from one of its scroll-shaped terminations to the other,) combined with the arm C, secured to the window casing, and the lever D, made fast to the blind, substantially in the manner herein set forth.

JABEZ F. LAWRENCE.

LUKE A. FARNSWORTH.

No. 7247.—*Improvement in Rotary Churns.*

What I claim as my invention, and desire to secure by letters patent, is—the devices of gearing as described, by which I change the motions of the churn box and dasher, with regard to each other, so that while one is stationary, the other shall rotate, and vice versa.

OSBERT B. LOOMIS.

No. 7248.—*Improvement in Spring Mattresses.*

What I claim as my invention or improvement, and desire to secure by letters patent, is so constructing a spring mattress, that the springs of the same shall project outwards beyond the light frame work, which supports them in their places, so that the whole upper and under surface, as well as the edges of the mattress shall present a yielding surface to the touch, by means of the projecting springs.

I also claim the manner of constructing the hair quilted upper or under coverings of the springs as set forth: that is to say, the hair covering which rests on or against the springs, is first made separately like a quilted bed-spread, and when drawn over the springs, by which the mattress, though long used, presents a uniform and elastic surface.

V. M'ELWEE.

No. 7249.—*Improvements in Cat Head and Shank Painter Stoppers.*

But I do claim as new, the application of the lock piece *g*, with the wedge or lug<sup>1</sup>, to act in the mortise<sup>3</sup>, to hold the link *d*, on the lug *e*, when put down for that purpose, or let the anchor “go” by raising it, without the intervention of any other moving part, such lock piece *g*, and lug or wedge<sup>1</sup>, being connected or combined, and operating with the other parts, substantially in the manner and with the effects described and shown.

CHARLES PERLEY.



No. 7250.—*Improved Surface Condenser for Steam Engines.*

What I claim as my invention, and desire to secure by letters patent, is the combination of a surface or radiating condenser with a box or case in such a way, that the condensation of the steam shall be effected therein, without subjecting the said radiating condenser to atmospheric pressure, in the manner described.

Secondly. I claim the aperture (*w*,) or its equivalent, for maintaining the equilibrium, and as a passage for any steam which may remain uncondensed in the radiating condenser, in the manner set forth.

Thirdly. I claim connecting the evaporator with the chamber (*h*,) substantially in the manner described, whereby I am enabled to draw off the saturated water from the bottom of the evaporator.

JOSEPH P. PIRSSON.

No. 7251.—*Improvement in the Manufacture of India Rubber Springs for Cars.*

What I claim as my invention, and desire to secure by letters patent, is the method of making cylinders, or rolls, of prepared India rubber, by rolling up a thin sheet of prepared India rubber on a mandrel, whilst the said sheet is in a green state, and as it comes from the heated calendering cylinders, substantially as described. And I also claim as my invention, in combination with the calendering cylinders, such as are usually employed in the manufacture of prepared India rubber, a mandrel or cylindrical rod pressed against the periphery, or a cylinder, or roller, so that the thin sheet of prepared rubber, in the green state, and taken as it comes from the calendering cylinders, may be wound upon the mandrel, and the several windings made to adhere by pressure, substantially as described.

FOWLER M. RAY.

No. 7252.—*Improved Removable Teeth for Scrapers.*

What I claim as my invention, and desire to secure by letters patent, is securing the removable teeth to any common scraper, in the manner herein set forth, so that they can be attached and detached at pleasure, whereby the same scraper is adapted to ordinary earth excavation, or to the excavation of gravel or cobble stones, as described.

JOSEPH SWEET.

No. 7253.—*Improved Mantel Piece.*

What I claim therein as my invention, and desire to secure by letters patent, is the manufacture of mantel pieces, by the combination of cast iron frames of ornamental open work, with a back or ground work of plate glass, or other vitrified substance, colored in imitation of marble, or after any other style of decoration, the said ground work being secured to the frames by means of plaster of Paris, or any other means, that gives strength and support to the whole, substantially as described.

HIRAM TUCKER.

No. 7254.—*Spring Inclined Plane and Roller Sash Stopper.*

What I claim as my invention, and desire to secure by letters patent, is the depressed form of the spring or inclined plane, as I have called it, and the roller so adjusted to this depression by the slide, that in raising the window sash, it operates as a friction roller, but in lowering the window sash, it operates as a clog to keep it from falling, substantially as described above.

SETH E. WINSLOW.



No. 7255.—*Improved arrangement of Door Springs and Levers.*

What I claim as new, and of my own invention, and desire to secure by letters patent of the United States, is attaching the spring *d*, and rod *f*, to the jamb of the door or standing part of the hinge, when combined with a swinging rod attached to the door, or swinging part of the hinge, all the parts being arranged, substantially as described, whereby the spring tends to close the door until opened to its fullest extent, and then acts to hold the door open.

W. B. BARNARD.

No. 7256.—*Composition for Covering Hams.*

What I do claim as my invention, and desire to secure by letters patent, is the formation of a preserving composition for coating meats, fruits, vegetables, &c., by the union of resin, shellac, and linseed oil, substantially in the manner and in nearly the proportions as herein set forth.

HORACE BILLINGS.

No. 7257.—*Improvement in Dividers and Compasses.*

What I claim as my invention, and desire to have secured to me by letters patent, is making dividers or compasses, with the micrometer adjustment, herein above described, the combination of devices for the same, consisting of a circular rack bar, arranged in slots, in the legs of the divider, with a spring in the slots of the moveable leg *b*, *b*, and the micrometer screw, all working together, as herein above specified.

D. H. CHAMBERLAIN.

No. 7258.—*Improved Entrance to Bee Hives.*

What we claim as our invention, and desire to secure by letters patent, is the devices for opening and closing the entrance of the bee house, in the manner set forth.

JOHN E. DALTON.

THOMAS STEVENS.

No. 7259.—*Improvement in Rings for Harness, &c.*

What I claim as new in my invention, and desire to secure by letters patent, is the combination of a sliding bar or sliding bars, (either with or without guides or guard bars,) with a ring, in the manner, substantially as described, for the purpose of being applied to straps for harness, or for any other purpose to which it may be applicable.

ANDREW DEITZ.

No. 7260.—*Process for making Cast Steel.*

What I claim as my invention, and desire to secure by letters patent, in the above process of making cast steel, is partly decarbonizing pig or cast iron in an oven, stratified with pulverized oxide of iron, substantially as described, and then melting such decarbonized pig or cast iron in crucibles, substantially as described.

JOS. DIXON.

No. 7261.—*Improvement in Machinery for making Wire Heddles.*

I do not claim the old machine herein described, as being one heretofore used and by which an incomplete heddle is produced; but what I do claim as my invention, and desire to secure by letters patent, is the before described



arrangement, combination and adjustment, with the said old machine, of the additional wheel (H,) on the main transverse shaft (Y,) fig. 1. The pinion (U,) and the shaft (S,) moved by it, wheel (a,) on the other end of the shaft, the short shaft (d,) and the two wheels (c,) and (h,) (o,) upon it, wheel P, and its attachments, and the cutter a, attached to the pincers as shown in fig. 5, for trimming off the burr at the end of the heddle, and also the levers (D,) (f,) (W,) (I,) (3,) (4,) (O,) (e,) and (r,) whereby the heddle is made complete in one machine, at one and the same operation, or any other combination, which is substantially the same thing, and by which analogous results are produced. I also claim what is herein termed wheel P, as herein described, and as shown in fig. 2, 3, and 4.

MILTON FINKLE.

No. 7262.—*Improved Method of Working the Pawl in Parallel Vises.*

But what I do claim as my invention, and desire to secure by letters patent, is the within described combination of the spring pawl c, and the metallic plate (or lever) b, with the foot of one of the crossed levers a, by which the spring pawl is made to act upon, and retain the rack bar e, when any article is grasped between the jaws of the vise, substantially as herein set forth.

JASPER JOHNSON.

No. 7263.—*Improvement in the Fluid Level.*

What I claim as my invention, and desire to have secured to me by letters patent, is a lever for determining a horizontal and perpendicular line, and the inclination of any slope with the same, constructed substantially as herein above set forth, that is, with a shallow cylindrical vessel or a tube, in the shape of an entire ring, half filled with quicksilver, or other liquid, in combination with a graduated annular dial, whether a floating needle or indicator be used or not, the whole arrangement being substantially as herein above set forth.

WM. G. LADD, JR.

No. 7264.—*Improvement in Machinery for Cutting Screws on the Rails of Bedsteads.*

What I claim as my invention, and desire to have secured to me by letters patent, is—

First. The combination of the adjustive clasp I, screw H, and holder C, for suspending and confining the nut C<sup>3</sup>, to the end of the rail, and centering the same, so that the axis of the nut shall always be coincident with the centre of the rail, whether the latter be of large or small diameter, substantially as herein set forth. I likewise claim the peculiar form and manner of securing the V cutter to the cylindrical head E, as described, that is to say, making the cutter as represented (in figure 7,) and letting the tapered end of the shank into the recess, at e<sup>2</sup>, bringing the angular shoulder against the cylinder e', and sustaining the bevelled points against the interior bevelled surface of the cylinder head at e<sup>3</sup>, by which arrangement the instrument, during the operation of cutting, is forced firmly against the head E, at e', e<sup>2</sup>, e<sup>3</sup>, the strain upon the confining screw T, being thereby greatly reduced, and the cutting tool itself strengthened.

SPENCER LEWIS.

No. 7265.—*Improvement in Harness Hames.*

What I claim as my invention, and desire to secure by letters patent, is



making the hame of a single piece of wrought iron, inclosing a piece of wood in such a manner as to present an entire iron surface, so that it may be readily finished in any convenient or ornamental way, and in a durable manner, when the hame is constructed, substantially as herein described.

JOHN LOW.

No. 7266.—*Process of making Paint from Bituminous Coal.*

What I claim as new, and desire to secure by letters patent, is the process of making black paint from bituminous coal, by the cleansing in water, grinding, mixing with acid, re-grinding in acid, and washing, substantially as herein fully set forth.

CHARLES MORTIMER.

No. 7267.—*Elastic Roller Sash Bearer.*

But what I do claim as my invention, and desire to secure by letters patent, is the combination of an elastic roller, with a shaft and box, the whole constructed and arranged as before described, for the purpose of supporting a sash in any desired position.

JULIUS A. PEASE.

No. 7268.—*Improvement in Gearing for Seed Planters.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the latch plate M, in combination with the connecting plate O, carrier P, and intermediate cog wheel R, for alternately gearing and un-gearing the cog wheel S, on the axle of the plating cylinder with the cog wheel T, on the hub of the driving wheel F, in the manner and for the purpose described.

JACOB PEIRSON.

No. 7269.—*Improvement in Apparatus for extinguishing Fires.*

What I claim, is the means of subduing and extinguishing fire by generating carbonic acid gas and other gases, resulting from combustion, in apparatus, substantially as herein described, and applying them by the pressure of their generation to the purposes above described.

W. H. PHILLIPS.

No. 7270.—*Improvement in Scale Beams.*

I claim in combination with the beam, and the knife edge bearings of the loop, the two vertical or nearly vertical projections, salients or knife edges b, c, as arranged with respect to the loop and beam, substantially in the manner and for the purpose herein before specified.

WILLIAM P. PIERCE.

No. 7271.—*Improvement in Endless Aprons for Thrashers.*

What I claim therein as my invention, and desire to secure by letters patent, is the endless grating composed of bars secured to the hide or leather straps, by twisting the latter in the manner and for the purposes herein set forth.

ADKINS NASH.

No. 7272.—*Improvement in Hydraulic Regulators for Machinery.*

In this invention, I do not claim the size, form, or shape of any piece or part as new, or the general combination of pumps, pistons or floats, or other



parts connected to the machinery to be regulated, or to the motive power to be regulated, which are in use in the general combination of hydraulic motion regulators; but claim to have overcome two several difficulties, which have heretofore existed in this kind of regulators, as follows:

First. The want of sensitiveness to take early notice of any variation of motion, or quickness in motion to open or close the steam valve, of power energetically applied to overcome friction of steam valve.

Secondly. The difficulty which has always existed in obtaining and maintaining a uniform discharge of water or liquids, from under pistons, rising and falling as motion varied, connected to steam valve, and acted upon by water moved by pumps; but I do claim and desire to secure by letters patent of the United States, the combination of pump A, moved with a reciprocal motion, with the machinery sought to be regulated, and with the water or fluid acting on piston C, and parts connecting it to steam valve, which controls the steam moving said machinery in such a manner as to cause the piston C, to rise and fall at each action of pump A, without moving the valve, while the machinery has the proper speed, and moving, or opening, or closing said steam valve with a quick striking motion, or overcoming friction about said valve, as with the blow of a hammer, when the motion of said machinery is too fast or too slow, or any analogous arrangement which will produce the same result, substantially in the manner and for the purposes and objects herein before shown and set forth.

LEMAN B. PITCHER.

No. 7273.—*Improvement in Apparatus for Sprinkling Streets, &c.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the sprinkling pipe and force pumps with the revolving water vessel, the several parts being arranged and operating, substantially as herein set forth.

JOSEPH D. PRICE.

No. 7274.—*Improvement in Plough Cleaners.*

What I claim therein as new, and desire to secure by letters patent, is the plough cleaner constructed of two shave blades, substantially as herein set forth, for the purpose of cutting in two the weeds and other obstructions, which accumulate upon the coulter, and thus detaching them therefrom.

JAS. F. REASIN.

No. 7275.—*Improvement in Chimney Caps.*

I lay no claim to the invention of a ventilator, made with a series of conic or pyramidal guards, fenders, or frusta as represented in figures 4 and 5; but what I do claim as my improvement, is one made with the helical continuous fender or guard, applied to the chimney or flue, and having its coils arranged or inclined with respect to one another, substantially as herein before specified.

AUGUSTUS M. RICE.

No. 7276.—*Improvement in Oil Cans.*

I claim the combination of the socket (C,) carrying the male screw (d, d,) and the taper tubes or spouts (D, D,) screwing into the socket (B,) with the collapsible gutta percha reservoir (A,) in the manner and for the purpose described, or in any way, substantially the same.

DAVID G. STARKEY.



No. 7277.—*Improvement in Machines for Raking and Loading Hay.*

What I claim as my invention, and desire to secure by letters patent, is the simultaneous raking and loading of hay from the ground by machinery, substantially as herein set forth; whereby, the labor of making windrows and cocking as in the usual process of hay making is saved, at the same time that the operation is both expedited and cheapened.

B. M. TOWNSEND.

No. 7278.—*Improvement in Wing Gudgeons.*

What I claim is the improvement of making the wing gudgeon (when cast or founded,) with a clear space G, between each of the wings, and the flanch or face plate B, the same being for the purpose herein above set forth.

MARK WILDER.

No. 7279.—*Improvement in Guitar Heads and Capio d'astra.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of tuning guitars by winding the strings each on a spindle, having a part below the guitar head of enlarged diameter, connected and combined with a peg of the usual construction by means of a cord, in the manner and for the purpose, substantially as described.

I also claim, combining an eccentric roller with a capio d'astra for moving and holding it down on to any desired part of a guitar handle, by means of a metal strap made to embrace the handle and capio d'astra plate, and attached thereto, substantially in the manner and for the purpose specified.

JAMES ASHBORN.

No. 7280.—*Improvement in Car Couplings.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the draw iron *a*, with the bearing *b*, the bolt *c*, the bed piece *d*, and the wedge or key *e*, in such manner that the draw iron *a*, makes a vertical joint with the bearing *b*, and through the bearing *b*, makes a horizontal joint with the bolt *c*, and the bed piece, *d*, and through the wedge or key *c*, all these joints are brought to any desirable rigidity of bearing.

I claim this particular combination of the parts described, whereby a free, but close horizontal and vertical joint, is at all times maintained between the bodies to which it is attached, and especially the applications of couplings upon this construction, to the connection of locomotive engines and tenders.

HIRAM BALDWIN.

No. 7281.—*Improvement in Machines for Breaking Hides.*

What I claim as my invention, and desire to secure by letters patent, is the breaking of hides, the working out of the lime and the bate, and the scouring of the tanned hides by means of revolving cylinders and beaters, substantially as herein set forth.

CHARLES BAUCHMAN.

No. 7282.—*Improvement in Cast Iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is the casting a "chilled railroad cast iron car wheel," giving a uniform chill to the wheel, by separating the arms B, from the rim of the wheel, by the inverted flanges D, forming a hollow rim, together with the combination of the



arches or ovals C, as herein described; thus using the solid hub to the chilled wheel, adding strength to the whole, and securing regularity in the wear.

JAMES BOON.

No. 7283.—*Improvement in Hydraulic Blowers for Furnaces, &c.*

What I claim as my invention, and which I desire to secure by letters patent, is the combination of the cavities or air cells, formed in part by the partitions D, D, D, on the periphery of the drum of the wheel or receiver of compressed air B, B, with said drum or receiver B, B, the exterior floating valves E, E, E, the interior valves H, H, H, and the hollow shaft O, all forming parts of, or connected with a wheel, to be turned when partially immersed in water, for the purpose of producing a blast of air through the hollow shaft O, to be used in heating, smelting, and other manufacturing and mechanical operations.

RANSOM COOK.

No. 7284.—*Improvement in Grates for Cooking Stoves.*

What I claim therein as new, and desire to secure by letters patent, is the manner herein described of arranging and combining the fire grate of cook stoves with the front fire plate A, and curve plate C, so that it shall retain its proper position for retaining the fuel in the chamber by its own weight, and shall be raised for removing coals and ashes, substantially in the manner and for the purpose herein described and represented.

JOHN T. DAVY.

No. 7285.—*Improvement in Submarine Telescopes.*

I claim, first, the main tube A, constructed with the side opening C, in it, to allow a spy glass B, to be used in combination with the telescope, as herein set forth.

Second. The mirror chamber constructed to allow the mirror to move through a space of about ninety degrees, and with a glass K, in the bottom of it, in the manner substantially as herein described, and for the purpose herein set forth.

Third. I claim the arrangement of the lamps or artificial lights on each side of the mirror, and leading the feeding draft from the main tube to the lamps under the mirror and lamps, and carrying the smoke away through the separate passage J, in the manner substantially as herein described, or in any other manner substantially the same.

WILLARD DAY.

No. 7286.—*Improvement in Preparing Clay for Brick Machines.*

What we claim as our invention, and wish to secure by letters patent, is the method of constructing the grinding apparatus or mill, in such a way that the knives on the shaft shall be set so as to describe a spiral line at their junction with the shaft, in order that no two of them shall be able to pass between any two pairs in the curb at the same instant, and under the same circumstances. It being understood that we do not claim, in general, this mode of setting the knives on the shaft, but only the use of the same, in connection with the fixed knives in the curb, for the purpose specified.

CHARLES M. FERRIS.  
NATHAN SWAN.



No. 7287.—*Improvement in Electro Magnetic Engines.*

What I claim therein as new, and for which I desire to secure letters patent, is first, the employment of induced electricity, as above stated, in producing magnetism, in the secondary electro magnets, to be used as a motive power, in connection with the prime mover, and to neutralize the secondary currents of the principal magnets formed by the direct current from the battery.

I claim the combination of the magnet changer ( $h, h'$ ) and pole changer ( $k, k'$ ) substantially in the manner and for the purpose set forth.

JOHN H. LILLIE.

No. 7288.—*Trap for catching Flies.*

What we claim as our invention, and for which we wish to secure letters patent, is the application of the devices for conveying flies into a box or vessel by wheels or belts between floats or projections, moving either by a circular or straight forward motion, in the manner and for the purpose herein specified.

JOSEPH B. FULLER.

GEORGE W. PIERCE.

No. 7289.—*Combined Shutter and Sash Fastener.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The lever  $f$ , secured by a fulcrum pivot to the sill of a window frame, when it is so arranged that the hook at its outer end can be made to interlock with the holder  $g$ , made fast to the blind, and when in that position the inner end of the lever be so connected with the apparatus for fastening down the sash, that the lever cannot be operated without previously unfastening the sash, substantially as herein set forth.

Second. I also claim the arrangement of the lever  $f$ , placed upon the window sill, the holder  $g$ , secured to the blind, and the latch  $l$ , secured to the lower bar of the sash, by which, when the blind is closed, and the window sash is raised, the descent of the sash will operate the lever, and thereby securely fasten the blind, substantially as herein set forth.

Third. I also claim the arrangement of the lever  $f$ , the holder  $g$ , the latch  $l$ , and the spring catch  $m$ , (respectively secured to the sill of the window frame, and to the blind and sash,) in such a manner that the closing of the sash will securely fasten it down, and at the same time operate and firmly retain the lever  $f$ , in such a position that it cannot be detached from its hold upon the blind, without previously unfastening and raising the sash, substantially as herein set forth.

THOMAS HARVEY.

No. 7290.—*Improvement in Carriages.*

What I claim as my invention, and desire to secure by letters patent, is—making the king bolt, the fixed ring of the fifth wheel, and perch in one piece, whereby the liability to accident is diminished, and the durability of the parts is increased, as herein described.

I likewise claim connecting the perch and its braces with the hind axle tree, and the thills with the fore axle tree, by screwing them into pipe clips, as herein described, whereby the great number of screw-bolts and nuts generally employed, are dispensed with, and a cheap and durable connection is obtained which at the same time admits of the ready disconnection of the parts.

JAMES PATTERSON.



No. 7291.—*Improvement in the Construction of Bases for Stands.*

What I claim therein as new, and desire to secure by letters patent, is the mode herein described of employing a base piece, that the legs or feet may hook into, and be held firmly in place by the cap plate, and rod running through the centre, the same being constructed and operating, substantially in the manner and for the purpose described and represented.

EZRA RIPLEY.

No. 7292.—*Improvement in Piano-Forte Action.*

First. I claim the spring tongue, in combination with the under angular lever M, for the purpose set forth, not limiting myself to the exact construction of it, as herein described, while the same effects by a like combination may be produced.

Second. I claim the regulating screw Q, for the purpose set forth, viz: to regulate the strike key separately, as set forth.

JOHN RUCK.

No. 7293.—*Improvement in Attachment of Harrow to Seed Planter.*

What we claim as our invention, and wish to secure by letters patent, is connecting with the machine a harrow, constructed with spring teeth, so arranged by means of a slide hinge g, g, that the wheel track towards the land to be sewed, can always be left undisturbed as an accurate guide in returning across the field.

MARCUS SAGE.

SILAS S. SAGE.

No. 7294.—*Improvement in Gearing of Seed Planters.*

What I claim as new, and for which I desire to secure letters patent, is—

First. The sliding frame R, in combination with the rod D, for the purpose of raising and depressing the drills A, A, and also for stopping the feeding, simultaneously, as above set forth.

Second. I do not claim the simultaneous throwing out of, and into action, the feed roller and its respective drills, nor do I claim the slide or shut-off J, as I am aware these both have been done. But what I do claim, is operating the shut-off J, and lever I, by means of the arm D, as set forth, for the purpose of causing the same to be self-acting, either when coming in contact with any obstruction, or when desired for sowing pointed or irregular lands.

ANTHONY SANDOC.

No. 7295.—*Compound Tubular Rail.*

What I claim as my invention, and desire to secure by letters patent, is the making of a two part break joint hollow rail, substantially as herein described, and in combination with the two part rail made hollow, as specified, I claim the blocks, inserted in such hollow, at the junctions of the sections, substantially as described.

ALFRED B. SEYMOUR.

No. 7296.—*Improvement in Sewing Machines.*

What therefore, I claim as my invention, is the herein before described disposition of the thread eye of the needle, (that is to say, the said eye, being placed near the point of the needle,) in combination with the afore described manner of supporting the needle, and applying it to the machinery which produces the corrugations or foldings of the cloth, not meaning to lay claim to



the combination of a needle and gears or other analogous contrivances for producing sewing, as the same have heretofore been applied and used, but meaning only to claim my improvement as constructed and made to operate, substantially as above specified.

DAVID M. SMITH.

No. 7297.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is causing the heat and products of combustion to enter the flue over the oven, on one side, and carrying the same across the top of the oven, down the other side thereof, in a broad sheet, thence under the oven, and thence up in a broad flue to the smoke pipe, substantially as described.

WM. ABENDROTH.

No. 7298.—*Improvement in Churns.*

What I claim as my invention, is the combination of the external chambers, their plungers and discharging passages, with the middle or air chamber, the whole being constructed, applied, and used, substantially as specified, and in combination with the above, I claim the air entering passages *d*, *d*, &c., applied and used, substantially in manner and for the purpose above specified.

JOHN ANDREWS.

No. 7299.—*Improvement in Dentists' Chairs.*

What I claim, and desire to have secured to me by letters patent, is the manner in which I arrange the operating parts within the frame work, and under the seat, in combination with the seat, so made as to move up and down within the frame work, and appear like an entire seat, as herein set forth.

A. MERRITT ASAY.

No. 7300.—*Improved Method of Attaching the Cylinder in Revolving Fire Arms.*

What I claim, is the improved mode of attaching the cylinder of barrels to the stock, viz: by means of the cylindrical tube B, in combination with the flanch and stud, or their equivalents, whereby I dispense with the usual spindle and hole for its reception in the centre of the cylinder of barrels, being thus enabled to enlarge the bore of the barrels in a cylinder of equal size.

D. H. CHAMBERLAIN.

No. 7301.—*Improvement in Machines for Drilling Stone.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the lever (*z*,) with the cranks and pitman, which operate it, for the purpose of rotating the drill periodically, by impingement against the cogs of the pinion (*a'*,) at its greatest elevation, returning to position when the pinion is removed from its range, the whole arranged and operated, substantially in the manner and for the purpose set forth.

GEORGE FLETCHER, SR.

No. 7302.—*Submerged Rocker for Separating Ores.*

What I claim as new in my invention, and desire to secure by letters patent, is the combination of the rocking frame C, the pans F, F, F, the levers B, B, and the bars E, E, attached, secured, and adjusted to the box A, or to a platform or boat, in the manner and for the purpose, substantially as herein described.

OLIVER EDES.



No. 7303.—*Improvement in Safety Lamps.*

What I do claim as my invention, and desire to secure by letters patent, is the sliding tubes I, I, in combination with the screw C, the said screw C, being furnished with the opening E, through which to fill the lamp, substantially in the manner and for the purpose described.

J. W. HOFFMAN.

No. 7304.—*Improvement in Double Cooking Stoves.*

What I claim and desire to secure by letters patent, is the construction of a double cooking stove, having two compartments I, I, and a smoke flue K, passing round one compartment first, and then around the other, in such manner that one shall be heated in a much higher degree than the other, arranged and constructed, substantially as herein described, and for the purposes set forth.

HENRY JACKSON.

No. 7305.—*Improved Arch Truss for Bridges.*

What I do claim, is the so combining or arranging them with respect to each other, and with the radial suspension rods, and on the cord or beam to which they are applied, that they and their suspension rods may overlap one another, and have the feet or parts of each which rest on the cord, upheld by the crown and suspension rods of the central part of an adjacent arch, all substantially as above specified.

HENRY LANERGAN.

No. 7306.—*Improvement in Coal Stirrers for Furnace Grates.*

What we claim as new, and desire to secure by letters patent, is—

First. The rake frame having numerous vertically moving fingers, constructed and operating to stir and clean the fire only by a vertical movement, said fingers being distributed beneath the grate, substantially in the manner, and for the purposes described.

Second. We also claim, in combination with the passages round the rim of the grate, admitting warm air above the fire, the vertically moving rake teeth, which open passages for the free escape of combustible gases, to be burned by said warm air, thereby maintaining a copious volume of flame all around the interior of the fire box, as herein set forth.

WILLIAM R. NICHOLS.

BURNITT C. BOYES.

No. 7307.—*Improvement in Cotton Gins.*

What I claim as new, and of my own invention, and desire to secure by letters patent of the United States, is—First. The making card cylinders with gutta percha, or other similar substance, filled in among the teeth, to form a regular surface, and stiffen the teeth, whether such cylinders, so fitted, are used for this or any other purpose for which they are available.

Second. I claim the application of one or more card cylinders with gutta percha, or other similar substance between the teeth, in connection with an equal number of smooth cylinders, to card cotton from the seed, substantially as described and shown.

Third. I claim the application of the wire gauze drum G, and roller h, beneath; first, for the purpose of allowing the blast to drive the dust and chaff from the cotton; and second, for the purpose of leading the cleaned cotton



out in a sheet, or bat, whether this roller and drum be applied to act with card or with the common saw gin.

STEPHEN R. PARKHURST.

No. 7308.—*Improvement in Piano Fortes.*

I claim the manner of constructing the tuning block, substantially as herein described, of the arched slab A, and the back piece B, with the wedge or piece *a*, and the diagonal bolts or keys *b, b, b*, whereby it is made capable of withstanding the great strain of the strings.

I also claim the metal plate D, carrying the ribs *d, d, d*, projecting from and forming part of it, the plate being attached to the upper surface of the tuning block, each of the strings of the instrument passing over and resting on a rib, and passing through a hole in the rib immediately behind, whereby the strings obtain a solid bearing on the tuning block, which will make them produce a full, round, clear tone.

JOHN RUCK.

No. 7309.—*Improvement in Brick Presses.*

What I claim therein as new, and for which I desire to secure letters patent, is first, the combination of the grated disk and hopper, constructed and arranged, substantially in the manner and for the purpose set forth, and in combination with the revolving moulds.

Secondly. I do not claim the mould as herein described, or the manner of holding the brick firmly while being cut off, these claims having already been granted to me in my patent of September 27th, 1844, but

What I do claim is the arrangement of the moulds (whether conical or otherwise, as before patented) in a revolving cylinder, with pistons revolving with them, and working under a stationary cam, as herein described, in combination with stationary cutters, or cutters revolving on their own axes, working in a groove, near the lower ends of the moulds, and also below the moulds, in the manner and for the purposes herein set forth.

Thirdly. I claim the apparatus for trimming the bricks, consisting of a stationary cutter and a piece in front thereof, to press up against the brick as the clay is cut.

Lastly. I claim the combination of adjustable headed pistons, with stationary cam, as herein fully specified.

NATHAN SAWYER.

No. 7310.—*Improved Arrangement of Propellers and Chimneys for Canal Boats.*

What I claim as my invention, and desire to secure by letters patent, is the employment, in combination, of two propellers, arranged in a recess at the stern of a boat, each being on a separate shaft, one above the other, and one of the propellers being placed back of the other, substantially as herein described, whereby a greater amount of paddle surface can be obtained within a case, and with a given width of stern, than by any other known plan.

And I also claim, in combination with the propellers arranged with a part of one of them above the water line, and enclosed in the recess at the stern of the boat, substantially as herein specified, the employment of a fan for exhausting the chimney of the steam boiler furnace, and for discharging the products of the combustion into the recess in which the propellers work, substantially in the manner and for the purpose specified.

BENJAMIN M. SMITH.



No. 7311.—*Lathe for turning a Peculiar Species of Curve.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of turning the periphery of steam wheels, or other articles, with regularly curved projections and depressions from a true circle, by combining with the mandrel of a lathe, or (what is equivalent thereto,) the shaft of the steam wheel, a cutter, which, in addition to the usual longitudinal motion parallel with the axis, receives a reciprocating motion towards and from the axis, by means of a cog wheel, and pinion and crank, or their equivalents, as herein described.

H. G. THOMPSON.

No. 7312.—*Improvement in Smut Machines.*

What I claim therein as new, and now desire to secure by letters patent, is as follows: the peculiar construction of the rubber pieces *o*, substantially as described and represented, whereby all parts of their surfaces may be successively appropriated to the rubbing action, each plate being susceptible of four changes before it becomes necessary to replace it by a fresh rubber.

DAVID ULAM.

No. 7313.—*Improvement in Brick Presses.*

What I claim as my invention, and desire to secure by letters patent, is the clearer *s, s*, as used in connection with the two plungers *O*, and *P*, for the purpose of delivering the brick and preventing the plunger *O*, and *P*, from becoming foul at their passing ends, and the clearer itself being kept clean, and polished by the action of the plunger *P*, upon its lower surface.

SHEPHERD WHITMAN.

No. 7314.—*Improvement in Instruments for Measuring Cloth.*

What I claim, is the manner herein described, of measuring cloth or other fabrics, by causing the material to pass over and give rotary motion to the roller *B*, carrying on its axis the endless screw gear *E*, gearing into the teeth of, and giving motion to the traveller wheel *H*, carrying an indicator *f*, pointing out the distance travelled by the periphery of the roller *B*, in the graduated adjustable index plate *I*, or by any other mechanical combination, substantially the same.

E. F. WHITON.

No. 7315.—*Improvement in Adjustable Shares of Corn Ploughs.*

What I do claim as my invention, and desire to secure by letters patent, is increasing or diminishing the angle of the ploughs with the central line of draft, by shifting the screws *K', K'*, to the holes (*c*,) in the ploughs, and the screws *L', L'*, to other holes in the beams *C, C*, without changing the position of the shanks *J, J*, and braces, *M, M*, by which more or less earth may be thrown toward the row of plants under culture, as described.

DAVID WOLF.

No. 7316.—*Improvements in changing a Reciprocating Motion into a rotary Motion.*

What I claim as new and of my own invention, and desire to secure by letters patent of the United States, is the application of the levers *h, h*, 1, catch blocks *8, 8*, with the bevels *9* and *10*, and springs *i, i*, or their equivalents, to interlock and unlock with the crank arms *g*, and *g*, 1.



And I claim, also, making the governing bar adjustable in combination with the levers *h, h, 1*, in such a manner as to give either a direct or reversed motion to the pulleys, *F, F, 1*, and I claim the above applications severally, and in combination in the whole and in the parts; the apparatus being constructed and operated, substantially in the manner, and for the purposes described and shown.

PETER YATES.

No. 7317 — *Improvement in Reed Musical Instruments.*

What I claim as my invention, or improvement in reed instruments made with a sounding board, is to make the reed opening *c*, directly through the wooden sounding board, in combination with the applying of the reed directly to the same, and fastening it to the sounding board, instead of using any metallic frame, for the opening and reed, as has been the customary method of making and constructing such instruments.

CHARLES AUSTIN.

No. 7318.—*Coupling for Pipes and Hose.*

I claim the construction of couplings for hose and tubing, by forming one part thereof into a hollow cylindrical cup or box, having wedge shaped flanges of metal inside and next to the edge thereof, and by forming the other part of the coupling of a flange equal in diameter to the first described coupling, having its face edge ground with the edge of the first coupling to make a tight joint with a cylindrical ring, (whose bore is equal to that of the tubes to be coupled) projecting from said flange concentric with it, and in diameter just large enough to pass between the flanges of the cup or box, and to reach just to the bottom of the cup, whose bottom face with the outer face of said ring are ground together to form a tight joint. Also said ring having on its periphery at the outer edge, wedge shaped flanges similar in form and angle to the flanges of the cup or box, and so arranged as to pass between the intervals of the same, so that by being turned round underneath them, they compress the ground surfaces of the couplings together firmly.

A. HEYER BROWN.

No. 7319.—*Improvement in Apparatus for Drawing Water.*

What I claim as my invention, and wish to secure by letters patent, is the plan herein described, of bringing water upon a level, over a hill, or in any situation where the fountain is not higher than where the water is wanted for use, viz: I claim the combination of the weight and its cord, pulley and ring, with the cord by which the bucket is drawn, and the hook or catch upon the carriage, the whole being arranged, substantially as described, for the purpose of drawing the empty bucket from the place of discharge over the highest point of the way to the spring.

CAIN BROYLES.

No. 7320.—*Improvement in Machines for Holding and Dressing Slates.*

What I claim therein as new, and desire to secure by letters patent, is the endless series of clamp carriages operating, substantially as herein set forth, to hold and carry the slates beneath the cutters.

SAMUEL E. CROCKER.

No. 7321.—*Improvement in Grain Driers.*

What I claim as new and useful in the foregoing, and desire to secure by



letters patent, is the construction and arrangement of the apparatus as herein described, by which a stratum of air is forced into a case enclosing the grain cylinder where it protects the grain from the direct action of the heat from the fire, and is there heated and conveyed through the grain so as to carry off the moisture therefrom, substantially in the manner and for the purpose set forth.

M. R. DUDLEY.

No. 7322.—*Improvement in Gearing for Regulating Speed.*

I claim, therefore, as my invention, and for which I wish to obtain letters patent, the employment of the wheel or pulley F, in combination with the cone and governing shaft O, substantially in the manner and for the purpose set forth

HOSEA ELLIOTT.

No. 7323.—*Improvement in Gauges for Spreading Plasters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the adjustable, expanding and contracting frame with the adjustable, expanding, and contracting bed, the several portions of the combination being arranged and constructed, substantially as herein set forth.

JAMES M. KEEP.

No. 7324.—*Improvement in Let-off Motion of Looms.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the yielding, weighted, and the stationary whip rolls, in connection with the let-off motion, as herein set forth, whereby the texture of the cloth is rendered more uniform than has been heretofore done, while it can be varied at will.

JONATHAN KNOWLES.

No. 7325.—*Improvement in Hanging Saws in Saw Mills.*

What we claim as our invention, and desire to secure by letters patent, is the method of hanging a mill saw, from guides in advance of its front edge, which sustains the whole pressure caused by the advancement of the wood on the carriage against the saw teeth, the plate of the saw swinging on the advanced guides as pivots, so that when cutting, it is kept running in a plane passing through the guides, in the direction in which the carriage moves, as a vane is kept by the wind in the direction in which it blows.

E. HERVEY PARSONS.

SANFORD E. PARSONS.

No. 7326.—*Improvement in Holding Daguerreotype Plates.*

What I claim as my invention, and wish to secure by letters patent, is the construction of a moveable holder for securing daguerreotype plates, by pressure from within, outwards, while the plates are being polished, burnished, buffed, or cleaned.

I also claim as new, the construction or arrangement of a holder composed of two parts with springs between the parts, pressing them from within outwards, against the bent edges or corners of the daguerreotype plate, and secured from contraction by a button or wedge, substantially as in the drawings. And in combination with such a holder, I claim the bending of the edges or corners of the plate so as to secure the same to this holder.

I also claim the adaptation of a daguerreotype plate, with its edges or corners bent, as shown in the drawings, to a moveable holder, constructed substantially as above described.

SAMUEL PECK.



No. 7327.—*Improvements in Apparatus for Splitting and Stretching Leather.*

I claim the construction of a machine performing the business of rolling, splitting, and stretching leather, at one operation, as set forth in the above specification and drawings, viz: the following combination of machinery, one roller (G,) driven by the motive power, having another roller N, moving above it, between which two rollers, the leather is to be compressed, the upper roller running free upon its own axis, which is fixed in a vibratory frame, in order that said upper roller may be adjusted thereby, to any variable or determinate pressure upon the leather, by proper power applied to said frame. A second roller placed a short distance in front of, and parallel with the first named one, running free on its own axis. A smaller roller (placed in a second vibrating frame, similar to, and adjustable like the first mentioned frame,) running above the last mentioned roller, to perform the functions of compressing the leather and holding it firmly, to receive the cut of the knife. A knife supported by strong springs and placed just in front of the last mentioned pair of rollers, with its cutting edge a short distance from the point of compression of these rollers, so as to act upon the leather directly, as it leaves the rollers.

A moveable frame to carry the leather to be operated on, moved by a gearing connecting it with the first roller (G,) and giving it a certain proportional rate of movement, compared with that of the roller, by which the quantity of stretch to be imparted to the leather can be regulated. An apparatus for gauging the knife to cut the leather to a given thickness, consisting of a pair of eccentrics *g*, and *g*, on the ends of a shaft, running parallel with the knife, and operating upon each end of it equally, as the said shaft is turned round, with an index plate *z*, and set lever *y*, to regulate and fix the same, during the operation of the machine.

BRADFORD ROWE.

No. 7328.—*Improvement in Vats or Press Boxes for Cheese.*

What I claim as my invention, and desire to secure by letters patent, is providing cheese vats with a moveable joint which is operated by a crank or lever, to enlarge and diminish the size of the vat, substantially in the manner and for the purposes herein set forth.

AUGUSTUS N. SEVERANCE.

No. 7329.—*Improvement in Roasting Coffee.*

What we claim as our invention, and desire to secure by letters patent, is the application of steam or vapor to the grains of coffee, just previous to subjecting them to the action of a dry roasting heat, within an apparatus constructed and operated, substantially in the manner herein set forth.

W. H. TRIPLER.

ELIAS BRECHT.

No. 7330.—*Machine for Making Wrought Iron Railroad Chairs.*

What I claim as my invention, and desire to secure by letters patent, is—  
First. The double or parting die *F*, *f*, substantially as described, parting by means of a joint at the top or otherwise, for the purpose above set forth.

Second. The vertical shears and benders *V*, *V*, working in connection with the double die *F*, *f*, in such manner as to cut and form the lips of a chair at one operation, substantially as described.

Third. I also claim the combination of dies, shears, punches, benders, and



clearers, arranged and operated in the manner and for the purpose above set forth, or any similar arrangement, wherein the combination is essentially the same.

WILLIAM VAN ANDEN.

No. 7331.—*Improvement in Board and Log Rules.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the log table and board rule, in the way and manner and in the form described and illustrated herein.

BENJ. M. VAN DER VEER.

No. 7332.—*Pipe Coupling.*

What I claim as my invention, and desire to secure by letters patent, is fastening together the abutting ends of two pipes, by forcing a sleeve of some hard substance over a belt of a softer substance, which envelopes the seam and is thus compressed between the sleeve and the pipes.

CHAPMAN WARNER.

No. 7333.—*Improvement in the Rubbers of Smut Machines.*

What I claim therein as new, and desire to secure by letters patent, is the vibrating rubber (e,) in combination with the feeding and rubbing cylinder (d,) constructed and operated, substantially in the manner and for the purpose described.

FRANKLIN WRIGHT.

No. 7334.—*Method of preventing Accidental Discharge in the Prussian Gun.*

What I claim therein as new, and for which I desire to secure letters patent, is the guard (n',) to prevent the discharge of the arm when all the parts are not in proper position, constructed, combined, and arranged with the arm, and operated substantially in the manner and for the purpose set forth.

JOHN WURFFLEIN

No. 7335.—*Improvement in Printing Presses.*

I claim the mode of governing the vertical motion of the type bed *N*, by the conjoint application of the crank *L*, and two part pressing bar *M*, made as a hollow cylinder and slide, with stop shoulder, to give the upward motion and pressure, and arranged to lengthen by sliding out at the back motion of the crank *L*, and the combination therewith of the grooved cam *b5*, and backing bar *b, b*, to regulate the descending motion of the type bed, substantially as described and shown.

I claim the application of the rotating cams *c3*, to act through the fork *c4*, and connect or disconnect the clutches 26, to give the shaft *c6*, a rotary motion during half of the rotation of the shaft *b*, and suspend the motion of the shaft *c6*, by the disk *c8*, and pins *t*, on the fork *c4*, during the other half rotation, so that the shaft *b*, goes two continuous revolutions to one intermitted revolution of the shaft *c6*, such intermitted revolution being applied to give an intermitted alternate motion to the double paper carriage in a printing press, or to give any similar intermitted alternate motion by any competent means, substantially as described and shown.

I claim the application crank *c9*, male wheel *d*, fixed female wheel *d1*, and connecting bar *d2*, for the purpose of communicating the intermitted alternate motion to the double paper carriage *d3*, substantially as described and shown.

F. G. AUSTIN.



No. 7336.—*Improvement in Bran Dusters.*

What I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of the exterior stationary shell or cylinder *E*, the intermediate revolving cylinder *D*, covered in sections with wire cloth of different qualities, and the central revolving cylinder *A*, with the ventilator *y*, for the admission of air, and the openings between the staves in the cylinder, for the emission of air to drive the flour and other stuff separated from the bran, through the wire cloth; the several parts, with their driving gear and apparatus, being constructed and arranged, substantially as herein described, and intended for the purposes set forth.

E. R. BENTON.

No. 7337—*Improvements in the construction of the Frame, Roof, and Floor of Iron Buildings.*

What I claim as my invention, and desire to secure by letters patent, is the method substantially as herein described, of making the frame work of iron houses of more than one story, by means of beams cast in sections, with end flanches, which receive bolts for uniting and drawing them together, and with top and bottom parallel flanches, when this is combined with columns, pilasters, or posts cast with horizontal flanches at top and bottom, the top flanche of one column, and the bottom flanche of another, being secured by bolts to the horizontal flanges of two beams, one column above and the other below, the point at which the beams are joined, for the purpose and in the manner substantially as described.

I also claim the method, substantially as herein described, of making the floors by means of thin plates of metal, formed with a groove on one edge, and tongue on the other, by riveting narrow strips of metal to their under surface, and near the edges, the plates so formed being put together breaking joints, substantially in the manner and for the purpose specified.

I also claim the method, substantially as described, of covering the roofs of houses by means of series of thin metal plates, formed each with a groove on one edge, by riveting narrow plates or strips to the under surface thereof, that the edge of one plate may fit into the groove on the lower edge of the next above, and so on throughout the series, substantially as described, when these plates are also provided with the lapping pieces or plates, riveted or otherwise secured to the upper surface of one end of each plate in each series, to lap over the end of the contiguous plates of the next series, the said lapping pieces of each series being also made to lap one over the other, substantially as and for the purpose specified.

JAMES BOGARDUS.

No. 7338.—*Improvement in Air Heating Stoves.*

What I claim as my invention, and desire to secure by letters patent, is—  
First. A grate combined with and around the hollow cylinder through which the air passes and becomes heated.

Second. A conical hood placed above the air cylinder and the grate, and connected with a smoke pipe for the purpose of creating a draft, concentrating the heat, and conducting of the smoke or gas from the burning wood or coal.

Third. The placing the grate on friction rollers, as described, in connection with the cylinder, for the purpose of clearing the grate of ashes, or bringing any part of it under the operation of a stronger draft or current of air.



Fourth. The combination of the air pipes, or air passages with the hood, as described, by which the air that has become heated in the cylinder, is conveyed to the room, or place to be warmed.

Fifth. The circular fender, which is also made to answer the purpose of a blower, by being raised and connected with the hood, as described.

Sixth. The method of introducing air into a hollow cylinder or air chamber, connected with and inside of the grate, and taking the air from beneath the hearth.

JAS. L. CATHCART.

No. 7339.—*Improvement in Bedstead Fastenings.*

What therefore I claim, is the lip N, in combination with the pawl and ratchet arc, substantially in the manner and for the purpose as described, and when the bedstead bottom is made of the said flexible strips, having such a flexibility as to enable them to be readily wound upon the windlass, and unwound therefrom, as stated.

CHAS. C. COOLIDGE.

No. 7340.—*Adjustable Mouth Piece for Road Scrapers.*

What I claim as my invention, and desire to secure by letters patent, is combining with the body of a scraper, a mouth piece which can be adjusted to form various angles with the bottom of the scraper, substantially in the manner and for the purpose herein described.

SHADRACH DAVIS.

No. 7341.—*Improvement in Mechanical Leeches.*

What I claim as my invention, and desire to secure by letters patent, is:

First. The arrangement of the wire G, L, of the button H, and of the covering of the instrument I, connected with the piston rod by the India rubber tube K, which allows the cylinder D, placed in the vacuum produced by the piston to work without admitting the air.

Second. The blades of the lancet, shaped like a V.

M. DELLUC.

No. 7342.—*Improvement in Defecating Sugar.*

I claim the process as described, for the immediate separation of the sugar from all foreign matter, which injures the purification by the manner above set forth, by forming a solid saccharate of baryta, pressing, decomposing, and separating the solid cakes and finishing the process as set forth, to the almost total suppression of heat necessary to evaporation.

ROBERT DE MASSY.

No. 7343.—*Improvement in Over Shoes.*

What I claim therein as new, and for which I desire to secure letters patent, is an over shoe covering the front of the boot at the sole, substantially in the manner and for the purpose set forth.

PETER DORN.

No. 7344.—*Improvement in Plough Cleaners.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the lever, notched arm, and vertical wheel B, with a conical roller placed under the beam and upon the cutter of the plough as above de-



scribed, for the purpose of operating the conical roller and cleaning the plough in the operation of ploughing, as set forth.

DANIEL D. GITT.

No. 7345.—*Improvement in Cooking Stoves.*

What I claim therein as new, and desire to secure by letters patent, is:

First. The mode herein described of constructing fire boxes for stoves, furnaces, &c. in two pieces, so that they are not confined as they are when made whole, or four pieces as described, but are free to move on their bed plate.

Secondly. I claim the manner herein described, of dividing the sliding hearth of cook-stoves in such a manner as to admit of its sliding under the stationary part, and be entirely out of the way; the whole being constructed in the manner and for the purpose, substantially as herein described and represented.

JAMES R. HYDE.

No. 7346.—*Improvement in Screw Excavator.*

What I claim as my invention, and which I desire to secure by letters patent, is:

First. The employment of a screw excavator combined with an adjustable tube as above described, for the purpose of excavating and conveying off earth, said tube being placed at any angle, or vertically, or horizontally as the case may require.

I also claim the apparatus for sustaining, moving, and guiding the excavator as above described, by which it is combined with the prime mover, so as to be readily pointed in any direction, said apparatus consisting of a ring with shifting bearings and a moveable bearing for the shaft to rest in which is connected with the prime mover by universal joints.

R. MONTGOMERY.

No. 7347.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the method of protecting boiler covers against the injurious action of varying temperatures, by combining therewith a lining made of metal, so formed that in its cross section, it shall present a curved line, that is, a line longer than a straight line as described.

And I also claim the method of supporting the doors of stoves, by means of a lever or levers so connected with the doors, substantially as described, that the said lever shall be moved in and out by the closing and opening of the door as described.

JORDAN L. MOTT.

No. 7348.—*Improvement in Working a Rotary and Vertical Churn Dasher.*

I claim the application of the shaft B, to communicate a vertical reciprocatory movement to the dasher F, and a rotary one, and the dashers M, and G, so that either can be used as desired, as herein set forth.

WILLIAM R. NASH.

No. 7349.—*Improvement in Straw Carriers.*

What I claim therein, and for which I desire to secure letters patent, is an elongated apron, or pierced platform, hung upon and worked by cranks connected with and forming a part of the thrashing and separating machine, substantially in the manner and for the purposes herein described.

WILLIAM PIERPONT.



No. 7350.—*Arrangement of several Slide Valves in the same Steam Chest.*

What I claim as my own invention, and desire to secure by letters patent, is the arranging of two or more valves in the same steam chest, to open and close the several steam ports or passages, leading to and from the cylinder of a steam engine, arranged and operated to graduate the admission of steam into the cylinders of steam engines in the manner and for the purpose, substantially as above set forth, in the foregoing specification.

CYRUS RICHARDSON.

No. 7351.—*Improvement in the Manufacture of the Oxide of Zinc.*

What we claim as our invention, and desire to secure by letters patent, is :

First. The use of a draft of air, through the suction tubes Q, Q, described above for oxidizing the metal, and carrying forward the products and the arrangement of tubs or basins for the reception of the heavier portion of the products as described herein.

Second. The arrangement of the oxidizing chamber, in combination with the receiving chambers, so as to allow the products which they contain, to be gathered without entering the chambers.

E. LECLAIRE.

E. BARNELL.

No. 7352.—*Improvement in the Melodeon.*

What I claim as my invention, and desire to secure by letters patent, is :

First. The employment of the arms P, in combination with the top O, of the bellows in the manner and for the purpose set forth in the foregoing specification.

A. L. SWAN.

No. 7353.—*Improvement in Oscillating Valves of Steam Engines.*

What I claim as new, and desire to secure by letters patent, is the recess  $j^2$ , sunk in the oscillating valve, and communicating with the steam passage  $f$ , in combination with the recess  $k$ , formed in the valve chamber, the same acting in the manner and for the purposes herein specified.

T. C. THEAKER.

No. 7354.—*Improvement in Machines for Polishing Stone.*

What I claim as my invention, is the manner or mode of giving a compound or double motion to the rubbers by means of two carriages, or a double carriage, each carriage moved by its respective cranks, substantially in the manner and for the purpose herein described, so that one motion of said rubbers will not interfere with the other motion; said machine can be propelled by any power now in use.

AMOS WALTER.

No. 7355.—*Improvement in Machines for Slitting Clothes Pins.*

What I claim as my invention, and desire to have secured to me by letters patent, is cutting the two sides of the outer end of the slot or fork of a clothes pin, on a regular sweep, by means of knives formed alternately on each side of the circular saw, which cuts the straight part of said slot, and in the direction above explained, whether said knives be made of portions of the plate of said saw, and bent outwards, as described, or in separate pieces, and attached to said sides of said saw.

HORATIO P. ALLEN.



No. 7356.—*Improvement in Stoves.*

What I claim as new therein, and which I desire to secure by letters patent, is first, the air chamber in which the air is heated, previously to its admission to the fuel, in combination with the spiral apertures, by which the heated air is caused to impinge on the upper surface of fuel, substantially in the manner and for the purposes as described.

ANSON ATWOOD.

No. 7357.—*Improvement in Connecting Rods of Steam Engines and other Machinery.*

What I claim as new and of my own invention, and desire to secure by letters patent of the United States, is the application of prepared India rubber, or of any similarly effective elastic substance, in the parts forming the joints of connecting rods of steam engines and other machinery, for the purposes of preventing jars, and breakage of the parts, when a reciprocating motion is changed to a rotary, substantially in the manner described and shown.

LEVI BISSELL.

No. 7358.—*Improvement in Steaming Grain preparatory to Grinding.*

I claim, in combination with a steam pipe (I,) and grain passage (B,) the deflecting partition (C,) for directing the steam upward, and the grain downward, whereby the current of grain is steamed by direct contact with the current of steam at the moment before entering the mill, substantially as herein set forth.

BENJAMIN F. BROOMELL.

No. 7359.—*Improvement in Balancing Sash.*

What I claim as my invention, and desire to secure by letters patent, is—

First. In connection with the grooves in the sash, the distribution of the several pulleys and friction wheels, and the cord attached to the bottoms of the sashes, instead of their tops, whereby the cord and pulleys are kept entirely out of view.

Second. The combination of the barrel axle, ratchet wheel and pin, with its case or bearings, or their equivalents, with the cord and pulleys, the whole arranged and operating, substantially as herein set forth.

HIRAM C. BROWN.

No. 7360.—*Tooth Segment Lock for Fire Arms.*

What I claim as my invention, is the moveable toothed segment G, and escapement or spring pawl I, or any mechanical equivalent therefor, (the said segment and escapement being arranged within the trigger,) and the toothed segment or arc C, (of the hammer,) in combination together, and with the trigger, hammer, and stock, and made to operate, substantially in the manner as herein before specified.

D. H. CHAMBERLAIN.

No. 7361.—*Cylinder and Trough Gold Washer.*

What I claim as my invention, and desire to secure by letters patent, is the separating gold or other heavy substances from others of less specific gravity, and water with which it may be mingled, by the use of a wheel or cylinder, and trough, the periphery of the former, and the bottom of the latter being covered and constructed, substantially in the manner herein set forth.

THOS. M. COLLINS.



No. 7362.—*Revolving Jaw Wrench.*

I claim the revolving jaw block N, and feather E, as combined together, and with the screw shank A, and made to operate, substantially as herein before specified.

NATH'L COLVER.

No. 7363.—*Improvement in Connecting Skeins with Axles.*

What I claim as my invention, is the combination with the skein of the screws g, g', for the purpose of tightening the skein on the axle tree, as set forth in the foregoing specification.

ABEL COMBS.

No. 7364.—*Improvement in preventing Fibres from Winding on Drawing Rollers in Spinning Machines.*

What I claim, is the improved manner of applying and using the roller, the same consisting in placing it not exactly in contact with the lower front drawing roller, but at a distance therefrom, and by means of separate or additional machinery, giving to it a rotary motion, at the same velocity, and in the same direction with those of the said lower front drawing roller, the whole being, substantially in the manner and for the purpose, as herein before specified.

JOHN C. DODGE.

No. 7365.—*Improvement in Machines for Washing Table Furniture.*

What I claim as my invention, and desire to secure by letters patent, is the construction of a cylinder with a cylindrical rack, supported by an upright shaft resting upon and being within, and supported by the cylinder, the rack having within it a conical rack and hoop, to receive and hold table furniture, in combination with a curb, containing a horizontal wheel with buckets to throw water upon the cylindrical rack; the whole supported by a frame, and by these mechanical means cleansing the surface of table furniture, without the use of hands, the entire machine being arranged, combined, and operated, substantially as is herein fully set forth.

JOEL HOUGHTON.

No. 7366.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is—

First. I claim making the cover of the feeder, projecting in front with curved sliding doors, substantially as described.

Second. I claim forming the bottom grate by casting projections, from the edge of the fire back, or the equivalent thereof, substantially as described.

Third. I claim giving the required strength to the fire brick lining of stoves, to prevent them from breaking or separating when cracked by the heat by the insertion into them of metal rods, wires, or wire cloth, substantially, as described.

Fourth. I claim the combination of the two series of flue tubes, arranged one above the other, and with a space between them, all for the circulation and radiation of heat; for the purpose of giving a greater heat at the bottom of the oven, substantially as described; and this I also claim in combination with the above arrangement of flues, as described.

And lastly, I claim the method of supporting and bracing the door or doors, by means of the bracing rod hinged to the door, and passing through a hole below, (or the equivalent thereof,) and bearing against the bottom of the stove or a stop, or the equivalent thereof, substantially as described.

JORDON L. MOTT.



No. 7367.—*Improvement in Splint Machines.*

What I claim as my invention, is the combination of the circular or tabular cutters  $e, e$ , their lateral wing knives or cutters, their rib knives or cutters  $h, h$ , and the waste escape passages for the waste strips  $f', f', f'$ , substantially in the manner and for the purpose above specified.

I also claim the improvement by which I am enabled not only to make round or cylindrical splints, but to introduce them to the dipping frames; that is, I do not claim the combination of cutters, dipping frames and passages leading from the cutters to the dipping frames, as these have been before invented and used for making square splints, and setting them in the frames, but I claim, in combination with cutters for forming the round splints and passages  $m, m$ , for receiving them and conducting them to the dipping frames, the passages  $i, i$ , or  $F$ , for the escape of the waste wood or strips  $f', f', f'$ , the same being applied together and made to operate in connection with the reducing plane iron  $e$ , and the plates  $C, D$ , substantially as above specified.

HORACE PATTERSON.

No. 7368.—*Improvement in Thrashing Machines.*

What I claim as my invention, and desire to secure by letters patent, is First. The peculiar serrated and duplex conformation of the beaters  $B$ , substantially after the manner and for the objects herein described; that is to say, consisting of a pair of plates  $B$ , and  $c, c, c$ , diverging rectangulantly from each other, and the latter consisting of teeth chamfered off from their inner side at their points, as represented in fig. 4.

A. S. PELTON.

No. 7369.—*Improvements in Sewing Machines.*

What I claim as new in my invention, and desire to secure by letters patent, is Firstly. The adaptation of the bearded needle ( $a$ ), such as is used in knitting or stocking frames, in combination with the manner of closing the beard or hook thereof previous to drawing it back with the thread, to prevent the point tearing the cloth, by passing it through the hole ( $v$ ), in the plate ( $t$ ), in the manner substantially as herein described.

Secondly. The combination of the spring thread leader or guide  $V$ , the arched spring ( $k$ ), and the friction roller ( $j$ ), for the purpose of leading the thread under the point of the beard of the needle.

O. L. REYNOLDS.

No. 7370.—*Improvement in Suspender Buckles.*

What I claim as my invention, and desire to secure by letters patent, is the constructing a buckle, by combining a curved plate ( $c$ ), with an angular lever ( $d'$ ), substantially in the manner herein set forth.

WM. SCARLETT.

No. 7371.—*Shell Propeller.*

What I claim therein as new, and desire to secure by letters patent, is giving the shell of a submerged propeller the form of a section cut from the open extremity of sea shells, of the class of which that represented in the drawing may be considered a type, the mouth of the helical tube at which the water enters, being of greater area than its hinder extremity, at which the water is discharged.

JAMES TREES.



No. 7372.—*Improvement in the Joints of Stove Pipes.*

What I claim as my invention, and desire to secure by letters patent, is the stove pipe herein described, as a new article of manufacture.

JAMES N. WARNER.

No. 7373.—*Improvement in Machines for Polishing Raw Hide Whips.*

What I claim as my invention, and desire to secure by letters patent, is the before described method of grinding, smoothing and polishing raw hide whips, in the manner and for the purpose herein fully set forth; that is to say, by the combination of the endless revolving belts D, D, between which the rough raw hide whip is placed, the suspended frame containing the upper endless belt, being arranged and operated in the manner and for the purpose set forth.

CHARLES BAEDER.

No. 7374.—*Improved Arch Girder.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as above described, of strengthening arches by means of metal straps, chains, or ropes, which constitute the cords, and pass around the ends and over the arched surfaces thereof, without being attached thereto, substantially in the manner and for the purpose specified.

I also claim providing the arch or beam with rollers at the ends around which the strap, chain, or rope passes, substantially as described, when this is combined with a coupling and tightening screw for varying the length of the said strap, chain, or rope, substantially in the manner and for the purpose specified.

JOHN BEVAN.

No. 7375.—*Improvement in Machines for Drying Bagasse.*

What I claim as my invention, and desire to secure by letters patent, is the employment of a revolving or rotary inclined flue, as applied and used for drying the bagasse or compressed sugar cane, or any other green or wet substance intended for fuel, with the heat and the flame coming from the furnace under the sugar kettles, or from any furnace whatever, all passing into and through this said inclined or rotary flue, at one and the same time, causing thereby the said bagasse or compressed sugar cane, or other said substance, intended for fuel, to become dry and combustible, and prepared for fuel, the moment that it has passed through said flue, using such machinery or mechanical means as I have herein described, or any other suitable mechanical agency or means that will enable me to carry out and put into practical execution or use, the principle or principles herein set forth, described and claimed, and to obtain the intended objects and results in combination as a whole.

JAMES HARRISON DAKIN.

No. 7376.—*Arrangement and connexion of Screw Propellers.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the principal and auxiliary propellers, connected by cog-gearing, or its equivalent, with that of the water pipes, in the manner and for the purposes, substantially as herein set forth.

PATRICK T. DEVLAN.

No. 7377.—*Improvement in Harness Buckles.*

What I claim as my invention, and desire to secure by letters patent, is



a buckle constructed, substantially as herein set forth, of a fixed plate, and of a moveable plate, between which the strap is retained, by pins secured to the one, and engaging in the other.

JACOB S. EMBICH.

No. 7378.—*Improvement in Hand Looms.*

What I claim as my invention, and desire to secure by letters patent, is the shedding the web by the direct action of the lathe on the treddles, by means of the moveable finger Y, fig. 6, and the finger staff W, fig. 6, or any similar fixtures for the purpose, bearing down the treddle, and thereby producing a shed in the web at the backward vibration of the lathe.

I also claim as my invention, the combined action of the hand, fig. 10, cam wheel, fig. 4, finger staff W, fig. 6, and the finger Y, fig. 6, upon the treddles K, fig. 9, as above described, for the purpose of shedding the web by the backward vibration of the lathe.

I also claim the combined action of the hand, fig. 10, cam wheel, fig. 4, by the zigzag groove *n*, fig. 4, lifting slide, fig. 8, and drivers fig. 7, upon the picker staff P, fig. 3, as above described, for the purpose of throwing the shuttle back and forth alternately at each backward vibration of the lathe, immediately after the shed is produced, the loom to be propelled by hand or other suitable power. All of the above parts being substantially as herein described.

JOHN G. GARRETSON.

No 7379.—*Improved Wickets for Lock Gates.*

What I claim in the foregoing as my invention, and desire to secure by letters patent, is making and arranging a sliding wicket gate, in such manner that when shut, it shall rest upon its seat, and make a tight joint; but when moving to or from its closed position, shall be raised from its seat and supported on wheels to diminish the friction, and consequently the expenditure of power required to open or close it; the power for operating it, being applied through a lever, (or its equivalent,) so as to move the gate very slowly but with great force, until it is started from its seat, and the weight thrown upon the friction wheels, and then to act upon it with diminished force, but move it faster until it is fully open, thus counterbalancing as near as may be the force and the resistance.

I do not claim the mere counterbalancing of the weight of the gate, and the pressure of the water on its upper edge, by means of the pressure of the water acting upon a flange at its lower edge. But what I do claim, is placing a flange for this purpose in an inclined position, substantially as described, so that the rena contracta shall not prevent the issuing water from pressing against it.

JOHN JACK.

No. 7380.—*Improvement in Machinery for Sawing Staves.*

What I claim as my improvement, is the mode of steadying a long cylinder saw, viz. : by means of a shaft and proper connections at one end of the saw, in combination with a series of friction rollers and their supporting frame applied outside of the saw, and made to bear against the curved surface of the same, and at or near its other or serrated end, substantially as herein before explained.

EDWIN JENNEY.

No. 7381.—*Improvements in Machines for Sawing Wood.*

What I claim as my invention, and desire to secure by letters patent, is—



1st. The combination and arrangement of the suspended vibrating feeding lever S, and rotating forked arm X, jointed reaching arm (N,) rack M, and slide bar H, with the self-champing, self-adjustive hinged jaws *k, k'*, for holding the wood firmly during the operation of sawing, the feeding of the log being effected by means of the rotating forked arm X, actuating the feeding lever S, in the manner described and represented.

2nd. I also claim the combination and arrangement of the suspended lifting lever O, and rotating lifting arm W, on the shaft E, with the swinging sash F, as described, by which the descent of the swinging sash will cause the lever O, to advance towards the rotating lifting arm W, when the wood is cut, and thus elevate the swinging sash F, in the manner and for the purpose herein set forth.

3d. I likewise claim the combination of the transverse bent lifting arm T, and suspended lifting lever O, with the suspended feeding lever S, bent rod V, for unlocking the spring dog U, and vertical spring catch R, as described, by which the feeding lever S, is engaged with the jointed reaching arm N, simultaneously with the ascent of the swinging sash, in the manner and for the purpose set forth.

SPENCER LEWIS.

No. 7382.—*Devices for Discharging Ashes from Tuyers.*

What I claim, and desire to secure by letters patent, is combining with the valve E, on the end of the discharge pipe, a scraper, substantially as herein described, so that the opening of the valve by the stopping of the blast, shall cause the scraper to act in the manner and for the purpose herein specified.

JAMES A. MAYNARD.

No. 7383.—*Method of giving Rotary Motion to Fluid Iron in Casting Rolls.*

What I claim as my invention, is the combination of the paddle or fan *h*, with the rod *i*, and rod *r*, and the frame work and gearing for giving motion to the face, for the purpose of producing the rotary motion of the iron in casting chilled rolls and similar castings.

JOHN C. PARRY.

No. 7384.—*Improvement in Feed Regulators for Canals.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the box G, the float L, sliding valve T, segment gate B, C, and float Z, arranged and connected with the mechanism, whereby they have an united action in the manner and for the purpose herein described.

CHARLES ROSS.

No. 7385.—*Improvement in the Form of Rubbing surfaces for Regulating Abrasion.*

What I claim as my invention, and desire to secure by letters patent, is the application of the curved form above described, to the rubbing surfaces of cocks or valves, pivots of upright shafts, mill-stones, or other parts of machinery in general, where the rubbing surfaces have to bear a pressure in the direction of their axis.

CHRISTIAN SCHIELE.

No. 7386.—*Improvement in Attachments for Mills for preparing Corn in the Cob for Grinding.*

What we claim as new, and desire to secure by letters patent, is the block (e,) with its arrangement of inclined planes, knives, throats, and other devices



which adapt it, to operate on corn cobs or ears of corn received from a suitable feeder, and also to be inserted in the eye, and be driven by the irons of the runner stone of grinding mills, substantially in the manner and for the purpose described.

We also claim the block (*e*,) arranged as described, in combination with the tubular feeder arranged, substantially in the manner represented in fig. 1, and for the purpose described.

JOHN M. SEELY.

WM. E. TOMLINSON.

No. 7387.—*Improvement in Power Looms.*

What I claim therein as new, and desire to secure by letters patent, are  
Firstly. The imparting to the heddle bearer (*r*,) a motion simultaneous with, and in opposite direction to the vertical one of the cylindrical jacquard (*i, j, k*,) by an arrangement of supplementary levers (*x*,) and their appendages as herein described, or by mechanism, substantially equivalent, the scroll cam or split pulley *v, w*, being so arranged as to act alternately as a lock and guide, and as a cam.

Secondly. The arrangement and combination, substantially as described and represented, of a segmental shell (*k*,) and stoppers (*t*,) for the ready adjustment of the jacquard to the pattern.

JOHN SHUTTLEWORTH.

No. 7388.—*Machine for Grinding Spiral Knives.*

What I claim as my invention, is the employment and use of the radial arm *M*, and its pivots or contrivances for supporting the knife, substantially in the manner and connected with the other parts of the mechanism, as herein before specified.

SILAS STEVENS.

No. 7389.—*Improvement in Apparatus for Setting Logs in Saw Mills.*

What I claim and desire to have secured to me by letters patent, is the combination of the alternating cylinder *I*, eccentric sliding dog *P*, cog *K*, notch *L*, and spiral spring *O*, with the common vibrating hand lever *G*, and concentric circles of teeth *E*, inclining in opposite directions for turning the ratchet wheel *B*, on the end of the pinion axle *C*, to the right or to the left, for moving the log on the head or tail block, either to the right or left, toward or from the saw, as before described.

T. C. THEAKER.

No. 7390.—*Improvement in Lathes for Turning.*

I claim the central stock heads *G*, and the chuck *H*, and the large spur wheel *I*, with the slots in them, to allow the axle to be placed in and taken out of the chuck sideways; the spur wheel *I*, being driven by spur wheels *G, S, S*, and *T, T*, the one *T*, acting as a compensation gearing to the other, while the slot of the large spur wheel is passing the other spur wheel *T*, in the manner, substantially as set forth.

J. D. WHITE.

No. 7391.—*Improvement in Quilting Frames.*

I claim the the folding and rolling the layers of any fabric, (which it may be desirable to quilt,) verily by the use of check rods attached to rollers as herein described, the rollers when operating, made to revolve alternately till the fabrics are folded and strained to the desired tension and position.

WILLIAM T. BARNES.



No. 7392.—*Improvement in Apparatus for Jointing Slats, Boards, &c.*

What I claim as my invention, is the combination of the frame A, with its supporting rails *a, a*, the adjustable support or bed bar C, its supporting and elevating screws and contrivances, and the moveable clamping bars L, M, with their clamp screw mechanism, the whole being applied and made to operate together, and in connection with the plane, substantially as above specified.

ALANSON BLANCHARD.

No. 7393.—*Improvement in Making the Reservoirs of Metallic Lamps.*

What I claim as new in my invention, and desire to secure by letters patent, is making the shell A, of the lamp reservoir, with the feeder *a*, standing out from one side of one single plate of metal, so as to require only one seam or solder joint, in the manner substantially as herein described.

P. J. CLARK.

No. 7394.—*Improvement in Galvanic Registers for Steam Boilers.*

What I claim is a galvanic battery or generator of electricity, and its current wires or conductors, an alarm or bell apparatus, and a mercurial column tube, combined with a steam boiler, and made to operate, substantially in manner and for the purpose of indicating the temperature or pressure of steam in the boiler, as specified.

ARTHUR DUNN.

No. 7395.—*Improvement in Apparatus for Jointing Boards.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the grooved plane, with the guides A, the sliding posts I, and adjusting screws G, and H, arranged in the manner and for the purpose herein described.

DAVID FOSTER.

No. 7396.—*Improvement in Smut Machines.*

What we claim as new in our invention, and desire to secure by letters patent, is—

First. The combination of the cup Q, with the shaft H, for the purpose of receiving the grain, and conducting it all around between the plates C, and F, as herein described.

Second. The adjustable bearing or guide, for setting the shaft H, vertical, consisting of the box M, blocks N, N, N, N, and the screws *n, n, n, n*, constructed and arranged as herein set forth.

Third. The circular revolving winged and slotted drum E, in combination with the scouring plates C, and F, in the manner, substantially as described, producing a current of air for carrying off the smut, dirt, and other foreign matter.

SAMUEL S. GOULDTHRITE.

CYRUS D. GORDON.

No. 7397.—*Improvement in Machinery for making Copper Tubes.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the horizontal heat retaining conducting tubes *h*, in combination with the grooved rollers *r*, arranged and operating in the manner and for the purpose herein set forth.

EDWARD HAMILTON.



No. 7398.—*Improvement in Machinery for making Four Sided Buckles.*

What we claim as our invention, and desire to secure by letters patent, are—

First. The combination of the vibrating carriage F, (in which is placed the die c,) the toggle levers or benders K, K, the gauge bars L, L, detacher e, holders M, and N, and cutting lever O, the whole constructed and operating, substantially as herein described, by means of which a four sided buckle is formed.

Second. The combination of the sliding frame J, and the vibrating hook i, (fig. 10,) with the grooved die H, and the fly punch C', the whole constructed and arranged, substantially as described.

Third. The combination of the vibrating jaws U, the cam P', and levers V', with the forming block and rod Q', k', and sliding bar O', the whole constructed, arranged, and acting, substantially as herein described.

ALAM NORTH.

OLIVER B. NORTH.

STEPHEN FRINK.

No. 7399.—*Improvement in Processes for Preserving Wood.*

Therefore, what I claim as my invention or improvement, is the combination of the processes of immersion, absorption, exhaustion, pressure and decomposition, substantially in the manner and for the purpose herein before explained.

CHAS. PAYNE.

No. 7400.—*Improvement in Fanning Mills.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the racks A, perforated gauge plates H, hooks (i,) and confining rods I, in combination with the shoe (s,) for confining and adjusting the riddles D, D, and screen G, in the shoe, in the manner described. I also claim the arrangement of the vibrating longitudinal inclined conducting trough T, in combination with the transverse inclined conducting trough Q, attached to the vibrating shoe, for receiving the cleansed grain from the screen and conducting it directly into the measure or bag, as described.

JESSE ROBERTS.

No. 7401.—*Improvement in Water Backs for Cooking Ranges.*

What we claim as our invention, and desire to secure by letters patent, is casting the induction and eduction pipes of the hollow back of cooking ranges, each with a convergence towards the other, when the lines of the inside of the top and bottom of the hollow back converge with the same angle, and coincide respectively with the lines of the induction and eduction pipes, for the purpose and in the manner described.

We also claim constructing the hollow back itself, with the lines of the inside of the top and bottom converging towards each other, for the purpose of preventing the accumulation of air, and securing a ready flow of water, as described.

H. H. STIMPSON.

FRED. H. STIMPSON.

No. 7402.—*Improvement in Tailors' Measures.*

What I claim as my invention, is the instrument as above represented at fig. 3, for ascertaining the slope of the shoulder, also the instrument represented at fig. 2, for ascertaining the measure from the socket bone to a line



perpendicular to the most prominent parts of the back, substantially as described, and for the purposes set forth in the specification.

AMOS STOCKER.

No. 7403.—*Improvements in the Preparation of Pile for Rugs, &c.*

What I claim, is the herein before described mode or process of combining or arranging together, and in the pile, the threads or yarns composing the figure or figures, the same consisting in winding the said threads on a beam or roller, by the aid of a collar, pattern and index, and other contrivances, essentially as specified, and cutting the said threads and transferring them, on and by means of the roller, to the pile in the machine, in which they are compressed, cemented and cut, all as herein before explained.

JAS. TAYLOR.

No. 7404.—*Improvement in Sofa Bedsteads.*

What I claim as new therein, and desire to secure by letters patent, is—

First. The drawer with castors, made so as to serve the double purpose of a receptacle for the bed clothes, and a support for the back, as described.

Second. I claim the sliding head and foot boards, so connected with the back that they slide in or out as the back is raised or lowered by the contrivances as above described, or other equivalent devices.

A. G. WARREN.

No. 7405.—*Improvement in Fanning Mills.*

What I claim as my invention, and desire to secure by letters patent, is—my improved construction and arrangement for shaking and operating the sieves in a winnowing mill, in the manner herein described.

JOHN WIEDMAN.

No. 7406.—*Improvement in Electro Chemical Telegraphs.*

What we claim, and desire to have secured to us by letters patent, is recording telegraphic signs on the surface of a revolving metallic cylinder, plate, or other equivalent surface, by means of an acidulated liquid, or saline solution, or water, held between the point of the wire conductor, and the metallic recording surface, by means of a non-conducting porous substance contained in a glass, or other non-conducting reservoir, in which the recording fluid is contained, to which the electric current from a battery is applied, by means of any of the known forms of manipulators and anvils used for making and breaking the circuit, the recording fluid being applied to the metallic recording surface, substantially in the manner herein fully set forth, by which the use of every description of paper is dispensed with, thereby saving great expense in telegraphing.

C. WESTBROOK.

HENRY J. ROGERS.

No. 7407.—*Improvements in Machines for Shearing Cloth.*

What I claim as my invention, and desire to have secured to me by letters patent, is—First. A flexible rest constructed substantially as herein above described.

Second. Making the rest susceptible of extension on each or either end, by combining with the ordinary stationary rest, and on each side thereof, a flexible and moveable rest, as herein above specified.



Lastly. I claim making an extension or flexible and moveable rest, self-operating, or so as to be changed by the cloth itself, in its passage through the machine, all as herein above set forth.

AMASA WOOLSON.

No. 7408.—*Improvement in Suspending Venetian Blinds.*

What I claim as my invention, and desire to secure by letters patent, is—the combination of pulleys *e*, *f*, and *g*, with cords *i*, *i*, for the independent movement of the supporting slat *d*, *d*, in the manner and for the purpose described.

JOSEPH BOHRER.

No. 7409.—*Improvement in Ventilating Railroad Cars.*

What we claim as our invention, and desire to secure by letters patent, is the method of ventilating the cars of a railroad train, and keeping out dust, smoke and sparks, by combining therewith a tube made in sections, and united by flexible joints at the junctions of the cars, which tube receives a current or currents of air forward of the chimney of the locomotive, and discharges it into the cars, through apertures, all substantially as herein described.

HEZEKIAH BRADFORD.

EPH'M MORRIS.

No. 7410.—*Improved Gun Harpoon.*

What I claim therein as new, and desire to secure by letters patent, is—attaching the line to both the shank and the head of the harpoon, in such manner that the extremity of the line is loaded with the harpoon into the gun, and lays in recesses made in the shank, and when the gun is fired, the line will trail from the butt of the shank, and will not tend to depress the head during its flight.

ROBERT BROWN.

No. 7411.—*Improvement in Fire Place Grates.*

What I claim therein as new, and for which I desire to secure letters patent, is—First. The combination with the open fire place or grate, having the side draughts as described, of the air heating chambers, consisting of an air chamber surrounding the fire, and a projecting chamber above, surrounded by heat, substantially as above set forth.

Secondly. I claim dividing the draught of an open fire, and causing the products of combustion to be drawn off at each end of the fire, as herein described. I also claim the sliding collar, at the exit pipe, in the manner and for the purposes specified.

GARDNER CHILSON.

No. 7412.—*Improved Method of making Shafts, &c., of Sheet Iron.*

What I claim as new therein, and which I desire to secure by letters patent, is the constructing of hollow plate iron shafts, of short cylinders, combined and connected together, in the manner and for the purposes above described.

CHARLES F. FISHER.

No. 7413.—*Improvement in Printing Presses.*

What I claim as my invention, and desire to secure by letters patent, is—First. The application of the toggle lever *x*, working on the stationary cam *y*, to raise the platen, in the manner and for the purpose herein described.



Secondly. I claim the combination of the toggle lever  $x$ , and toggle  $w$ , and  $v$ , with the stationary cam  $y$ , substantially in the manner and for the purpose herein set forth.

Thirdly. I claim the combination of the toggle lever  $x$ , and toggle  $w$ , and  $v$ , with the swing platen, as herein set forth.

Fourthly. I claim the combination of the spiral springs  $J$ , and the trip  $G$ , when used in combination with the swing platen, substantially in the manner and for the purpose herein described.

CHARLES W. HAWKS.

No. 7414.—*Improvement in Brick Presses.*

What I claim therein as new, and desire to secure by letters patent, is operating the roll ( $N$ ,) for holding the mould box, the gate ( $P$ ,) for regulating the discharge of clay, and the piston ( $E$ ,) for compressing the clay into the moulds, by means of a wheel ( $J$ ,) furnished with series of teeth ( $H$ ,  $H'$ ,  $H''$ ,) secured to it, and acting through trundles, shafts, cranks, and connecting rods, connected with the roll ( $N$ ,) the gate ( $P$ ,) and the piston ( $E$ ,) respectively, substantially as herein set forth.

JOHN W. HOPE.

No. 7415.—*Improvement in Gang Ploughs.*

What I claim as new, and desire to secure by letters patent, is the spur wheel (3,) so constructed and arranged within the periphery of the driving wheel, that it may be made at pleasure to pass its rowels through the holes or notches in the tire, into the surface of the ground when under compression, and thereby grapple and gain adhesion to the ground, substantially in the manner herein set forth.

Second. I also claim the combination of parallel bars ( $P$ ,  $P'$ ,) to regulate the breadth of each separate furrow, with the adjusting curve ( $a'$ ,) for determining the horizontal direction of the draught, so as to adapt the amount of work done by a single traverse of the engine, to the adhesive power of the wheels when applied to the particular kind of land under cultivation, substantially as herein set forth.

Third. I also claim preventing the choking of the plough, by means of the recurved point ( $E$ ,) of the mould board, acting to turn aside and guide backwards the choking material, as herein set forth.

Fourth. I also claim the manner of connecting the harrow to the locomotive, so that the conductor may at pleasure, by turning a crank, reverse its advancing side for the purpose of freeing the harrow teeth from choking materials, in the manner, substantially as herein set forth.

J. D. HOPE.

No. 7416.—*Improvement in Board and Log Rules.*

What I claim as my invention, and desire to secure by letters patent, is the combination with the inner revolving plate of the rotary tape measure, of the several tables thereon, substantially as described.

CHARLES B. HUTCHINSON.

No. 7417.—*Improvement in Shuttle Motion of Looms.*

What I claim as my invention, and desire to secure by letters patent, is attaching the bat wing, by an adjustable connection to one extremity of a lever



whose outer extremity is connected by a short strap with the picker stick, the lever turning on a single adjustable vertical pivot, and being interposed between the wiper, operating as described, and the picker stick motion from the wiper being transmitted through this lever, strap, and picker stick, to the driver, so as to cause it to throw the shuttle with the proper degree of suddenness and velocity, when the loom is working at a high speed; this arrangement admitting of the easy and quick graduation of the suddenness and velocity with which the shuttle is thrown, as herein set forth.

OLIVER A. KELLY.

No. 7418.—*Improvement in Nursery Chairs.*

I claim the improvement of the moveable back piece L, and its sustaining fixtures, in their application to the back and seat, substantially as specified, and for the purpose of using the chair either as a cradle or as a lolling chair, substantially as specified, the said improvement consisting in so combining one of the arms with the seat, by means of a slide adapted to such seat, that both the arm and slide may be moved in a direction away from the other, or stationary arm, so as not only to lengthen the seat so as to enable it to support a mattress or bed, disposed on it, but to render the arm a foot guard, for an infant or child, placed on the said mattress or bed.

SAMUEL S. MAY.

No. 7419.—*Improvement in Flying Horses.*

What I claim as my invention, and desire to secure by letters patent of the United States, is the combination and arrangement of the undulated cams with the levers, and these with the flexible connections to the front part of the horses, for the purpose of, and by which I produce the rising and falling motion, which I term the galloping motion, as herein before described and represented.

ELIPHALET S. SCRIPTURE.

No. 7420.—*Improvement in Electro Magnetic Machines for Shocks.*

What I claim therefore, as my invention, and desire to secure by letters patent, is separating the shock derived from the initial secondary current of the double coil magneto electric machine, for that of the terminal secondary, by causing the latter to pass through a closed circuit, substantially in the manner and for the purposes set forth. I also claim the manner of adapting the same machine to transmit both the initial and terminal secondary currents at pleasure, by bearing off the spring (G,) by the arm L, substantially as described.

SAM'L B. SMITH.

No. 7421.—*Improvements in Carding and Mixing Wool and Cotton.*

What we claim as our invention, and desire to secure by letters patent, is the picking and carding of the wool and the cotton, separate from each other, and the drawing them off together from the second carding machine, and then mixing their fibres with each other, by means of the finishing or condensing card.

STEPHEN H. ADAMS.

JOHN A. WOOD.

No. 7422.—*Improvement in connecting Whiffletrees with Carriages.*

What I claim as of my own invention, and which I desire to secure by letters patent of the United States, is the stops or blocks (e, e,) cast upon or



otherwise affixed to the box (*a*,) and the stops or blocks (*n*, *n*,) cast upon or affixed to the follower (*h*,) in such manner that when the two are joined by a central bolt passing through, they will interlock and form a stop coupling, secure from derangement from external causes, the whole being constructed, substantially as herein described.

JAMES BARNES.

No. 7423.—*Improvements in Hydraulic Apparatus for producing Blast.*

What I claim as my invention, and which I desire to secure by letters patent, is—

First. The use and application of boxes, tubs, or cavities, attached to wheels, disks, or arms, by moveable joints or journals, and then carried in a rotary direction alternately, through air and water; said boxes or cavities, moving at the same time on their own journals, in such a manner that they shall enter the water with their open sides downwards, and when beneath the same shall empty or discharge the air which has been compressed within them by the water, into a receiver which is separate from such wheels and air boxes; all for the purpose of producing a blast of air to be used in heating, smelting, and other mechanical operations.

Second. I also claim, for this purpose, the disk, recess or concavity of the wheel, so as to allow the receiver to project over the mouths of the air boxes, to receive their compressed air.

Third. I also claim for the same purpose, the cam *D*, the cranks *J*, *J*, *J*, and the cranks *K*, *K*, *K*, attached to the air boxes, together with the piece *U*, *U*, in the open side of the boxes, the mouth *T*, for discharging their compressed air and the block *G*, for throwing forward the cranks *J*, *J*, *J*.

RANSOM COOK.

No. 7424.—*Machine for Cutting Leather into Hollow Ware Forms.*

What we claim therein as new, and desire to secure by letters patent, is the combination of the vibrating knife with the fluted rollers, constructed and operating, substantially in the manner and for the purpose above fully set forth, one of which rollers being fluted longitudinally and the other circumferentially, serve firmly to hold the leather in any position.

DURAND & PECQUEUR.

No. 7425.—*Improved method of Forming Embankments, Levees, &c.*

What I claim as my invention, and desire to secure by letters patent, is the method herein described of depositing earth, to form embankments, levees, etc. and to fill up low situations by means of filtering dams or their equivalents, and a trough or conduit conveying earth and water from a higher level, substantially as herein specified.

DUFF GREEN.

No. 7426.—*Improvement in Adjusting Packing for Oil Boxes of Axles, &c.*

What I claim as new, and desire to secure by letters patent, is the employment of an adjustable band surrounding the oil packing of rail road cars or other journals, so as to admit of adjustment from the outside of the box, in adjusting the packing around the journal, and render the box oil tight in the manner and for the purpose, substantially the same as herein described and represented.

WARNER GROAT.



No. 7427.—*Improvements in Cars for Plank Roads, Wooden Rails, &c.*

What I claim as my improvement, is the combination of a chain of rollers with broad bearing surfaces running around a stationary rail or track, on the carriage with an independent chain, which forms a track for said rollers to travel over when resting on the ground, and which passes around outside of said chain of rollers.

I also claim the mode of constructing said track chain (*k*,) by lapping the links thereof; so that the rollers shall have a constant bearing on the three plates, which form two succeeding links, and break joint with each other, as clearly represented in fig. 2.

GIDEON MORGAN.

No. 7428.—*Improvement in Bedstead Fastenings.*

What I claim in the above described bedstead as new, and desire to secure by letters patent, is the device for securing the ends of the side rails to the posts, consisting of a headed tenon on the rail and two wedge-shaped, and dovetailed boxes in the post, the latter held in place by the pendant arms and tie rods, by which the mattress is stretched, substantially as herein set forth.

CHAS. H. PARKER.

No. 7429.—*Improvement in Spring Mattresses.*

What I claim as my invention, and desire to secure by letters patent, is the construction of the jointed spring mattress, substantially as set forth in the specification.

WM. F. RESSEGINE.

No. 7430.—*Improvement in Thrashing Machines*

What I claim as my invention, and desire to secure by letters patent, is surrounding the twisted wings with an unperforated case, and placing the same inside the thrashing cylinder—the whole revolving together in the manner and for the purpose set forth.

Second. Constructing the concave of adjustive star or other shaped teeth attached to rods fastened to the frame, substantially as described and set forth in the specification.

I am aware that such teeth have been used in the throat of the feeding apparatus of a corn sheller to aid in feeding, and therefore, I only claim them when used for the rubbing surface of the concave.

Third. Placing the curved spring rack between the concave of adjustive teeth, and the vibrating separator, in the manner and for the purpose described.

ELISHA S. SNYDER.

No. 7431.—*Arrangement of Mirrors in Traps.*

What I claim therein as new, and desire to secure by letters patent, is the arrangement of the mirrors, substantially in the manner and for the purpose set forth.

JAMES STEVENS.

No. 7432.—*Improvement in Planes for Tonguing and Grooving, &c.*

What I claim as my invention, and desire to have secured to me by letters patent, in said apparatus, is the combination of a gouge or gouges (for removing the bulk or greater portion of a shaving in forming tongues or grooves, in boards or planks) with smoothing tools having a chisel edge, a cutting, and side lip on either, or both sides thereof, (for smoothing the sides and bottom of the grooves, and the edges about the tongues as set forth,) said gouges.



being set in front of said smoothing tools, and the whole being arranged and operating, substantially as herein above set forth.

JAMES A. WOODBURY.

No. 7433.—*Improvement in Machines for Finishing Morocco.*

What we claim as our invention, and desire to secure by letters patent, is—

First. A sliding head with finishing tools (one or more) attached, said tools to be held down by weight or springs; said sliding head to do its work while in a backward or forward motion, and running on straight ways, as herein set forth.

Secondly. We claim as our invention, the application of one or more clasps (G, G,) for the purposes described in the specification, in combination with one or more finishing tools, whose motions are parallel with said clasps.

We also claim the application of one or more finishing tools which are held stationary while rubbing the skin or paper, and allowed to revolve a little when required to equalize the wear on the peripheries of the same.

EDWARD BOOKHOUT.

HENRY COCHEN, JR.

No. 7434.—*Improvement in Spring Teeth of Hay Rakes.*

What I claim as my invention, and desire to secure by letters patent, is the construction of the spring teeth of the hay rake of a double wire, in place of the single one generally used, as described in the specification.

ZEPHANIAH BREED.

No. 7435.—*Improvement in Attaching Neck Yokes to Poles of Carriages.*

What I claim as my invention, and desire to secure by letters patent, is the mode herein described of constructing the neck yoke, (either solid or divided,) and fitting the tongue or pole of the carriage, and these so constructed and fitted, in combination with the moveable band on which are projections, as in fig. 3, or knobs, by which means the whole are securely connected, and thus form a universal joint for the purpose stated, and not otherwise.

JAMES M. BROWN.

No. 7436.—*Improvement in Parlor Stoves.*

What I claim therein as new, and for which I desire to secure letters patent, is the arrangement of the flues in combination with the fire chamber, substantially in the manner and for the purposes set forth.

GARDNER CHILSON.

No. 7437.—*Improved method of making Nails by Rolling.*

What I claim as new therein, and which I desire to secure by letters patent, is the auxiliary furnace, in combination with the machinery for rolling nails, &c., as above described, for retaining the heat of the plates or rods of iron, while they are separately passed into the machine.

E. H. COLLIER.

No. 7438.—*Improvement in Machines for Dressing Stone.*

What I claim as my invention, and desire to secure by letters patent, is dressing stone by means of chilled cast-iron burrs, substantially as herein set forth.

ROBERT EASTMAN.



No. 7439.—*Improvement in Furnaces for Calcining Gypsum.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the pan or boiler with the three chambers, when they are combined with the beams, slides and dampers, when the whole is constructed, arranged and combined, so as to operate, substantially according to the method and to effect the purpose, substantially as herein described.

BENJ. FOWLER.

No. 7440.—*Improved Spike Machine.*

What I claim therein as new, and desire to secure by letters patent, is :

First. The rising and filling guide and cutter frame, in combination with a moving series of dies, whereby the spike rod is guided into the moving dies and a slip of proper length cut off to form the spike, the knives being operated by levers which force them towards each other whenever the movement of the frame brings the levers in contact with stationary arms projected from the main frame.

Secondly. The forked and hinged clamp (J,) constructed substantially as herein set forth, in such manner that when open its inner fork performs the office of a gauge, to regulate the length of the spike, and when closed, its outer fork grips the shoulder of the spike during the heading, and its inner fork is withdrawn to allow the formation of the point.

Thirdly. The combination of the arm L, with the clamp J, and its tongue *m*, by means of which the heading, gripping, and pointing of the spike are effected, substantially as herein described, at one operation.

AMMI M. GEORGE.

No. 7441.—*Improvement in Upright Piano Fortes.*

What I claim as my invention, and desire to have secured to me by letters patent, is—First. Combining with each of the standards *a, a, a, a*, of the frame, a sustaining and strengthening rod, arranged in a curved groove in the back of said standards, and operating substantially as herein described.

Second. I claim connecting the stem *s, s*, to the rocker bar, fastened to the key lever, as described, and also to the horizontal arm *t, t*, on which the jack, &c. is supported, by which the whole action becomes attached to the key lever, and the hammer is made to return when the end of the key lever descends, all as herein above set forth.

I also claim combining the back catch with the fly of the jack, as above set forth, and in combination with a jack and back catch, so arranged, the curved arm *l', l'*, projecting from the hammer stem, and having a regulating button *m, m'* connected to said arm, as above set forth.

Lastly. I claim regulating the throwing off the hammer from the strings by the projection *O'*, from the centre block of the hammer, and below its centre of action, in combination with a regulating button passing through the fly of the jack.

LEMUEL GILBERT.

No. 7442.—*Improvement in Apparatus for Raising the Grate in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the apparatus for lowering and raising the grate, so constructed as to act without liability to obstruction from the baking of ashes between the parts of machinery, having sliding pieces or racks, furnished with perforations instead of cogs, in combination with pinions acting upon them by cogs, said pinions



having the spaces between the cogs beveled, bringing them to a kind of edge, thus admitting no flat spaces to intervene where ashes may accumulate to prevent the working of the machinery.

BENJ. K. MALTBY.

No. 7443.—*Devices for Moving and Holding a Piston Breech Pin.*

I claim as new, and of my own invention, and desire to secure by letters patent of the United States, the arrangement of the parts described and shown, in which arrangement the radius bar *a*, is connected to the rear end of the sliding breech pin *c*, by a tenon 10, and slot 9, taking a pin 8, on the jaws 6, at the rear end of the breech pin, for the purposes of holding the breech pin in place while the charge is exploded, removing the breech pin to receive successive charges, and forcing the charge into the barrel by replacing the breech pin for the next successive discharges; the whole constructed, arranged, and acting substantially as described and shown.

WM. W. MARSTON.

No. 7444.—*Improvement in Safety Stirrups.*

What I claim as my invention, and desire to secure by letters patent, is the safety bar *A*, and the spring *H*, arranged in the form set forth, or in any other form, substantially the same in principle.

Second. The arrangement of the loop cap, by which I place the stirrup bars *S*, *S*, at right angles with the stirrup strap.

Third. The flat bar *U*, rising from the top of the loop *V*, to prevent the rolling of the stirrup in the strap.

NATHAN POST.

No. 7445.—*Improvement in Feed Apparatus for Mills.*

What we claim as new therein, and desire to secure by letters patent, is the feeding apparatus, as above described, for keeping a regular supply constantly fed to the grinding surfaces.

JOHN SHERLOCK.

WM. BRACKBILL.

No. 7446.—*Improvement in Apparatus for Parti-coloring Yarn.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of parti-coloring yarns by winding them on reels arranged in frames, so constructed as to admit of immersing in dyeing liquor, such portions of the yarns as are desired to be dyed, and shifting the same for dyeing other parts in like manner, substantially as described.

And I also claim connecting one or both of the reels in each frame, by means of slides, to admit of removing the reel from contact with the yarns, whilst in the process of dyeing, substantially as specified.

ALEXANDER SMITH.

No. 7447.—*Improvement in Mills for Grinding.*

What I claim as my invention, and desire to secure by letters patent, is the combination of crushing rollers with a disintegrating apparatus, arranged and operating substantially in the manner and for the purpose, as herein set forth.

J. R. STAFFORD.



No. 7448.—*Combination of a Guide Tooth with an Inclined Scraper.*

What I claim therein as new, and for which I desire to secure letters patent, is the guiding tooth or revolving cutter, combined with the inclined scraper, substantially as above stated, for regulating the course of the machine.

JOHN F. WOOD.

No. 7449.—*Model for Vessels.*

What I claim as of my invention, and desire to secure by letters patent, is the forming a vessel with a scow shaped bow, having on its sides two wide keels running the whole, or a part of its entire length, and so constructed that a portion of the inclined surface of the bottom shall always be above the water at the bow, and this with or without the supplementary keels forming small channels, by which construction air enters at the bow, in the manner set forth, and is retained under the bottom of the vessel, for certain purposes described herein.

SOLOMON ANDREWS.

No. 7450.—*Improvement in Connecting and Disconnecting Hubs and Axles.*

What we claim as our invention, and desire to secure by letters patent, is the method herein described, of securely fastening the hub of a wheel to its axle, or easily detaching the same therefrom, to wit: by means of the two sliding plates B, B, combined with the double scroll shaped cam A, in such a manner that by turning the said cam, in one direction the sliding plates (B, B,) will fasten the axle journal within the hub so securely, that it cannot be unfastened by any jar or shock upon the wheel; and by turning the said cam in an opposite direction, the sliding plates (B, B,) will be detached from their hold upon the axle journal, and permit the wheel to be detached therefrom.

A. M. BILLINGS.

T. A. AMBROSE.

No. 7451.—*Improvement in Setting Artificial Teeth by Atmospheric Pressure.*

What I claim therein as new, and which I desire to secure by letters patent, is the air chamber (e,) constructed and arranged, substantially as herein above set forth, and for the purposes described.

JOHN A. CLEVELAND.

No. 7452.—*Improvement in Looms for Weaving Cut Pile Fabrics.*

What I claim as new and of my invention, is—

First. The use in power looms for weaving cut pile fabrics, of intersecting plates, entering between the two pieces of cloth, and allowing the pile warps to cross and recross, from one to the other, which extend through the reed, thereby forming on the upper surface a plane upon which one of the shuttles is supported, in passing through the web, substantially as described.

Second. The continuing of the intersecting plates to the outside of the warps, by adding the within described false reed, or otherwise, for the purpose of supporting the ends of the intersecting plates, and for guiding the warps by them, substantially as described.

MERTOUN C. BRYANT.

No. 7453.—*Improvement in Brick Presses.*

What we claim as our invention, and desire to secure by letters patent, is the method of preventing clay from adhering to the surfaces, which make pressure



on it, or in which it is pressed or moulded, by the application of artificial heat to such surfaces, substantially as herein described.

And we also claim the method of elevating the followers of the moulds for discharging the bricks, by combining with the carriage of moulds, a platform or carriage, which slides on inclined ways, and which receives motion from a carriage of moulds, substantially in the manner and for the purpose specified.

THOMAS CULBERTSON.

GEORGE SCOTT.

No. 7454.—*Improvement in Atmospheric Churns.*

What I claim as my invention, and desire to secure by letters patent, is a hollow staff, connected with a square or round hollow plunger, with a valve placed at the top, or at any point inside of said staff, said valve to be so arranged, that when the said staff and plunger are raised, the valve will open; and when said staff and plunger are forced down, the valve will close, and the atmospheric air in the plunger will be forced through the body of the milk or cream, by which operation butter will be formed; said staff, dasher, and valve, to be used in any vessel containing milk or cream.

PETER F. ELLICOTT.

No. 7455.—*Improvement in Electric Telegraphs.*

What I claim as my invention, is the above described new, or improved electro-caustic telegraph, or application to telegraphic purposes, and substantially as specified, of heat generated by electric apparatus, or a current or currents of electricity, passed through a fine platinum wire or other proper conductors or equivalents therefor, as explained; the marks produced in or through the paper or other material, used in connection with the heated wire, being regulated in their length and number, so as to be characters or expressions of letters, figures, or words, indicative of any message which it may be desirable to transmit, from the battery end of the telegraph, to the other end of the line, all essentially as set forth, or in the manner generally understood by telegraphic operators.

G. H. HORN.

No. 7456.—*Machine for forming Washers and attaching them to Carpet Tacks.*

What I claim as my invention, and desire to have secured to me by letters patent, is the spring nippers *s, s, s, s*, arranged on a vibratory arm, and having a tapering bore, formed one half in each of said nippers, for guiding the point of the tack to the centre of the washer. Also the combination of said nippers with the circular die, and vertical moving punch, arranged and operating, as above set forth.

I also claim a machine for preparing carpet tacks, consisting of the parts above stated, in connection with an adjustable feeding motion, composed of the double endless bands, ratchet, and pawl, and parts which connect the same with the driving lever, as herein above set forth.

JASON G. HOWARD.

No. 7457.—*Improvement in the Hinge of Rolling Iron Shutters.*

What I claim therein as new, and desire to secure by letters patent, in constructing the hinges or joints of rolling iron shutters of thin slats of iron, is having a bar or wire inserted within the coiled edges of the joint or hinge, to give strength and stiffness to the joint, said bar having its ends bent, to pre-



vent the several strips of iron composing the shutter, from sliding laterally on each other, and the projecting bent ends of the wire being curved by eaves projecting from the ends of the strips, and turned down, thus forming an even edge to the shutter, which will slide easily in the groove of the frame in which it is placed, the whole being constructed, substantially as herein described.

A. LIVINGSTON JOHNSON.

No. 7458.—*Improvement in producing Photographic Pictures upon Transparent Media.*

What we claim as our invention, and desire to secure by letters patent, is—

First. The taking of photographic pictures upon transparent media, by coating them with some suitable vehicle for the sensitive material, substantially as set forth.

Second. We claim the process of preparing and using the sensitive coating or film upon surfaces, whether of transparent, translucent, or opaque bodies, substantially in the manner and for the purposes set forth.

JOHN A. WHIPPLE.

WM. B. JONES.

No. 7459.—*Improvement in Cooking Stoves.*

What I claim, and desire to secure by letters patent, is the combination of the flues with a single damper (e,) so that by a single movement, I cause the hot air to traverse once or twice entirely round the oven at pleasure, substantially as described.

ABRAHAM KEAGY.

No. 7460.—*Improved Arrangement of Sash Stopper.*

What we claim as our invention, and desire to secure by letters patent, is placing the eccentric J, within the bar or stile of the window sash E, in such manner as to act upon a weather strip S, instead of against the frame or casing of the window; the former being thereby firmly pressed against the latter, and all defacement of the window frame by the eccentric avoided, as described.

NATHANIEL MYERS.

FRED. C. SMITH.

No. 7461.—*Improvement in Mounting the Knife of Straw Cutters.*

I claim of the above arrangement, the placing of the pivot N, of the knife upon a spring, for the purpose of enabling the operator to give the knife a draw or sliding cut.

JOHN R. NELSON.

No. 7462.—*Machine for Repairing Roads.*

What I claim as new in my invention, and desire to secure by letters patent, is hanging the cutters E, E, for cutting off the ridges at the sides of the ruts, the scrapers F, F, for scraping the dirt into the ruts, and the roller D, for pressing and smoothing the road, upon the same frame; all the said parts operating together, in the manner and for the purposes, substantially as herein set forth.

NATHANIEL POTTER.

No. 7463.—*Improvement in the Weed Cutters of a Cultivator.*

I claim the combination of the bar a, with the weed cutter b, in the manner and for the purpose set forth and represented.

CHARLES RODGER.



No. 7464.—*Improvement in Water Wheels for Increasing or Diminishing their Diameters.*

What I claim therein as new, and desire to secure by letters patent, is the double adjustable arm, constructed as above described, for expanding or contracting the size of the wheel, for the above specified purpose, so that the absolute diameter of the wheel and arms shall be reduced or expanded, to go within a suitable curve.

T. R. TIMBY.

No. 7465.—*Improvement in Self-acting Cheese Presses.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the rollers H, H, and K, K, and wedges I, I, in combination with the inclined planes D, D, acting in the manner and for the purpose herein set forth in the foregoing specification, to produce a sufficient pressure upon the cheese, or other article to be pressed.

JOHN UNDERWOOD.

No. 7466.—*Improvement in Boot Trees.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the sliding wedges A, A, and the right and left screws B, B, with the inclined planes or grooves C, C, substantially in the manner and for the purpose above set forth, the screws B, B, being made to play within the groove D, and being confined to its place longitudinally, by the bar E, working in the groove H.

WILLIAM UPFIELD.

No. 7467.—*Improvement in Carriages.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the open elliptical axletree (i, j,) with the sliding slotted frame (n,) attached to the body of the vehicle, and passing through the upper half of the axletree, and attached to the upper leaf of the elliptical spring, placed inside of the axletree, the lower leaf of said spring being secured to the inner side of the lower half of the axletree, the several parts being arranged, and operating in the manner and for the purpose herein fully set forth.

MILES T. WATKINS.

No. 7468.—*Improvement in Waste Gates.*

What we claim as our invention, and desire to secure by letters patent, is a waste gate which is hung upon a vertical axis, the lower part of which is made wider one side of the axis than it is the other, the side which is narrowest towards the bottom of the gate, being sufficiently wider than the other towards the top, that the balance of the pressure of the water will change from one side of the axis to the other, and open and close the gate as the water rises and falls.

HIRAM TAN.

THOMAS P. HOW.

No. 7469.—*Improved Method of fitting the Bows of Vessels.*

What I claim as my invention, and desire to secure by letters patent, is making the rear edge of the cut water to project on each side of the stern, to form a recess on each side, substantially as described, in combination with the sheathing pieces which fill up such recesses, and which cover and protect



the ends of the plankings, and which also admit of giving better lines for the passage of the bow of the ship or other vessel through the water, substantially as described.

BENJAMIN BARSTON.

No. 7470.—*Improved Method of Distributing the air over the Heating and Cooling Surfaces of Air Engines.*

What I claim as of my own invention, and desire to secure by letters patent, is causing the air entering and leaving the cylinder, to pass over the heating and cooling surfaces in a thin stratum, by means of the plates (*i, i',*) or their equivalents, substantially in the manner and for the purpose set forth.

ERNST BUCKUP.

No. 7471.—*Improved Sash Stopper.*

What I claim as my invention, and desire to secure by letters patent, is the triangular shaped double acting wedges or fasteners *f, f,* placed within recesses of corresponding shape, formed in the front or rear sides of the sash side bars (or in the side slats of a window frame,) acted upon by any kind of handles or levers, in such a manner that they will press the sashes inwards or outwards, in contradistinction to side ways, and thus retain them in any desired position, and render them air tight within the window frame.

CHARLES C. CAMERON.

No. 7472.—*Improvement in Straw Cutters.*

What I claim as my invention, and desire to secure by letters patent, is the method of feeding straw, fodder, and other substances, to a series of rotating cutters, by means of a continuous motion by a roller armed with pointed teeth, and hung in a swinging frame, substantially as described.

I also claim the method of cutting straw, fodder, and other like substances, by means of the cutting cylinder, provided with cutters, the outer faces of which, from the cutting edge, are curved or inclined in towards the axis, so as to admit of continuous feed, the blades of the cutters acting as gauge plates for the length of the cut, in combination with the feeding the straw, fodder, or other substance to be cut, by a continuous motion, substantially as set forth.

REUBEN DANIELS.

No. 7473.—*Improvement in the Feeders of a Straw Cutter.*

What I claim as my invention, is the guard piece *S,* in combination with the feed rollers, to carry the straw or other material to the cutters, as described.

JOHN E. ERB.

No. 7474.—*Improvements in Setting the Teeth on the Concave of a Clover Thrasher.*

What I claim and desire to secure by letters patent, is the right to use and manufacture machines for the purpose of thrashing and hulling clover and other seeds of a similar nature, having the teeth of the concave, or the stationary set of teeth so inserted in leather on a bed of cork, as to give them an elasticity sufficient to cause them to resume their original position when misplaced by the passage of any foreign substances which may be introduced by accident or otherwise into the machine.

JONATHAN HIBBS.



No. 7475.—*Improvement in the Cutters and Rakers of a Grain and Grass Harvester.*

What we claim as new, and desire to have secured to us by letters patent, is—

First. Making the pointed cutters N, concave on the faces towards each other, in the manner and for the purpose set forth, by which the cutters are rendered self-sharpening, and bending the upper plate over the back of the lower, or sliding cutter plate, and bringing the notched or turned edge against the lower plate, in the manner and for the purpose described.

Second. The arrangement of the stationary cyma reversa fingers P, in combination with the vibrating hook teeth or claws (o,) bands c, and the appendages for operating the same, by which the grain is collected into sheaves or gavels, before being discharged upon the ground.

Third. The combination of the hook teeth or claws o, rock shaft m, bent arm (n,) lever (s,) spring (j,) and revolving arm l, for arresting the grain whilst removing the gavel or sheaf from the cyma reversa fingers P, on to the ground, as described.

We likewise claim the combination of the pinion H, perch p, and axle F, the former working into the segment on the front axletree, for steering the forward part of the frame and cutters.

HENRY C. BEVINGTON.  
HAZARD KNOWLES.

No. 7476.—*Improvement in Respiring Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is the valve represented by figs. 2, 3, 4 made of any metallic substance, and a nose piece represented by fig. 5 and 6, having an air tight tube surrounding that part which is designed to fit about the nose to accommodate the features of any person, and the use of these together with a cylinder vessel, air chamber, or bag, for the purpose of enabling a person to breathe with perfect ease, air which has been condensed more or less in any such cylinder vessel, air chamber or bag, which is to be confined to the person of the wearer while the surrounding air is impure from any cause.

BENJ'N J. LANE.

No. 7477.—*Improvement in Collimating Levels.*

What I claim, and wish to secure by letters patent, is the mode, substantially as herein described, of forming a levelling instrument, by combining the spirit level with the collimator having a partial lens, viz: by means of a partial reflector so placed as to reflect both the cross wire and the spirit level bubble in such manner, that the image of the latter may be seen bisected by the image of the former when the instrument is horizontal, the image of the cross wire being at the same time seen in optical contact with the distant point, which marks the level with the observer's eye.

JOHN LOCKE.

No. 7478.—*Improved Re-immersing Amalgamator.*

What I claim as new, and desire to secure by letters patent, is the combination of the revolving basin, and its attached tubes, or spouts with the trough containing mercury, the tubes having sufficient length to force the issuing currents to the bottom of the mercury, or nearly so, and their discharging



orifices being above the surface of the mercury, which latter peculiarity causes the streams, as they pass and enter in succession, to force below the surface any particles of metal which may not have been amalgamated by the first immersion.

J. R. MILLER.

No. 7479.—*Improvement in the Seeding Apparatus of Seeding Planters.*

What I claim as my invention, and desire to secure by letters patent, is :

First. The employment of a reciprocating sliding gauge plate, when said plate is provided with oblique feed openings, in combination with openings in the grating plates of different obliquity and bottom of the hopper, for increasing or diminishing the quantity of seed to be sown while the machine is in motion, by adjusting the end of the connecting rod *m*, nearer to or farther from the fulcrum of the vibrating bar (*p*,) and thus increasing or diminishing the traverse or sliding movement of the gauge plate *j*.

Second. I also claim the combination of the hooked connecting rod (*m*,) arm (*l*,) vibrating plate (*p*,) provided with a series of holes (arranged in the arc of a circle scribed from the pivoted end of the rod *m*,) and undulatory cam *s*, with the reciprocating sliding gauge plate (*j*,) by which the reciprocatory movement of the sliding gauge plate is regulated for the purpose of increasing or diminishing the feed or sowing of the seed.

LEWIS MOORE.

No. 7480.—*Improved Lock Bolt for Shutters.*

What I claim therein as new and of my invention, and desire to secure by letters patent, is the bolt, having a slot through which the key passes, which will admit the bolt to be moved back sufficiently far to prevent the spring catches from catching in the notches in the bolt, in combination with a key hole in the guard, which renders it necessary to remove the key before the shutters can be opened, substantially in the manner and for the purpose set forth.

JOSEPH NOCK.

No. 7481.—*Improved arrangement of Cutters in a Grain and Grass Harvester.*

Having thus fully described the nature of my improvements in mowing and reaping machines, what I claim therein as new and original, and desire to secure by letters patent, is the arrangement, substantially as herein described and represented, of cutters bolted to an endless belt *s*, revolving in a vertical orbit, and moving on a rail *m*, guarded and disposed after the manner described.

JACOB PIERSON.

No. 7482.—*Improvement in Machines for cutting Lozenges.*

What I claim, and desire to have secured to me by letters patent, is the adjustive spring fingers *g*, connected to the two wheeled car *i*, *j*, *k*, *l*, said car being appended to the axle *b*, of the revolving cutters, the wheels and the screws that fasten the finger plate to the transverse bar, preventing the finger plate from touching the sheet of paste during the operation of cutting the lozenges therefrom, as herein fully set forth.

JOHN W. PEPPER.

No. 7483.—*Improvement in the construction of Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is making the fire bottom, and front hearth, or summer arrangement, of the class



of stoves herein specified, in one piece, connecting the two with inclined plates placed within the front plate of the stove, substantially as described, whereby I am enabled to have the hearth below the level of the fire bottom, whilst the inclination given to the connecting parts are not visible, thereby effecting the purposes herein specified.

I also claim the above method of making the hearth and fire bottom, in combination with the method of connecting them with the oven bottom and stove bottom, by means of tongues and grooves, whilst the fire bottom extends under the fire back, substantially in the manner and for the purpose specified.

And I also claim, in combination with the above described method of making the hearth and fire bottom, the extension of the front stove plate, down in front of the parts which unite the hearth and fire bottom, the said front stove plate, being provided with projecting pieces to rest against the inclined joints to aid in securing in place, the said united hearth and fire bottom, substantially as described.

S. H. RANSOM.

No. 7484.—*Improvement in Safety Tubes for Lamps.*

What I claim as my invention, and desire to secure by letters patent, is the application or addition of inner pipe or pipes, (one or more, as the case may be,) inserted into a piece of metal or other material, as before described, being either stationary or revolving, thereby preventing the top of the lamp from being removed, without drawing it over the inner pipe or pipes, and thus extinguishing the flame.

FRANKLIN STEWART, M. D.

No. 7485.—*Improvement in Machines for Cutting Felloes.*

What we claim as our invention, and desire to secure by letters patent, is the causing the shaft E, of the cutter head, to automatically descend during its forward motion, until the felloe has been formed by the cutters in the cutter head, and then be thrown upwards to its starting position, substantially in the manner herein set forth, to wit: by resting the said shaft E, upon the moveable bar L, which bar is forced upwards by a spring or weight, and has a rack k, and a pin l, connected to its moveable end; the said rack k, being connected with, and caused to descend, by the forward movement of the cutter head shaft, through the medium of the band v, the shaft f, and the pinions h, and i, on the shaft g, which movements are thrown out of gear with the rack k, at the proper time, by the pin l, and the spring s, which act upon the levers N, and M, and the shaft g, substantially as herein represented and described.

JOSEPH ADAMS.

LEVI ADAMS.

No. 7486.—*Improvement in Condensers of Steam Engines.*

What I claim, and desire to secure by letters patent, is combining with a tubular condenser, the receiving and heating reservoir, which is connected at or near its top, with the exhaust passage, and with one end of the series of condensing tubes, and at or near its bottom with the other end of the series of tubes, and with exhausting and feeding pump, the whole constructed, substantially in the manner and serving the purposes herein specified.

ETHAN BALDWIN.

No. 7487.—*Improvement in Lath Cutting Machines.*

What I claim therein as new, and of my invention, and desire to secure by



letters patent, is the arrangement of the lever N1, in combination with the quadrant Y, rack X, pinion Z, ratchet G1, screw T, and wheel P, thereby moving the periphery of the log being cut, an equal distance at each stroke of the knives, (the log being moved by the chuck Q, instead of applying the power to the periphery of the log,) by which arrangement I can cut laths from square logs, substantially in the manner and for the purposes set forth.

WM. BULLOCK.

No. 7488.—*Improvement in Quilting Frames.*

What I claim as my invention, and desire to secure by letters patent, is the adjustable quilting frame, constructed in the manner herein described, whereby the strained surface of the quilt can be placed in an inclined position, and at any convenient height, thus enabling the quilter to preserve an erect position of the head and chest while at work.

C. H. COOK.

No. 7489.—*Improvement in Apparatus for Cutting Dried Beef.*

First. What I claim as my invention, and desire to secure by letters patent, is the combination of the knives E, and F, F, forming an angle to each other, as described.

Second. I claim the combination of the bed B, with the other parts, to graduate the thickness of the shavings, as described.

DANIEL W. GOBLE.

No. 7490.—*Improvement in Spiral Churn Dashers.*

What we claim as our invention, and desire to secure by letters patent, is the application of a re-acting spiral revolving dash, (the wings of which may be constructed of wood or tin, or any other suitable material,) to a box churn, as described and set forth in the above specification and accompanying drawings, or to any of the usual forms of churns, to which it may be attached, to good advantage.

CORNELIUS R. HIGHT.

JOHN HIGHT.

No. 7491.—*Improvement in Carts for spreading Manure.*

What I claim and desire to secure by letters patent, is the combination of the box B, bottom D, rollers C, cylinder E, cog wheels F, and A, lever G, arranged and operated, substantially in the manner herein described.

J. K. HOLLAND.

No. 7492.—*Improvement in Lamp Tubes.*

What I claim as of my own invention, and desire to secure by letters patent, is the combination of the two conical tubes, as shown, for forming a regulator for the flame of a lamp, substantially as described.

ISAIAH JENNINGS.

No. 7493.—*Improvement in Revolving Hammer Fire Arms.*

What I claim as my invention, and desire to secure by letters patent, are as follows:—First. A central hammer, to be shifted from some convenient position, so as to bear on the central cone, and to be driven by the usual operations of the lock.



Second. A revolving carriage, to carry and turn the hammer.

Third. A trigger turning on a pivot in the cocking lever, and which is thrown forward into a position convenient to be drawn, by pulling said cocking lever, the whole to be substantially as herein described.

GEORGE LEONARD, JR.

No. 7494.—*Improvement in Sounding Boards for Pianos.*

What I claim therein as my invention, and desire to secure by letters patent, is the supporting the bridge (C,) upon a thin base piece (B,) secured over an opening formed in the ordinary sounding board (A'') substantially in the manner and for the purposes herein set forth.

CONRAD MEYER.

No. 7495.—*Improvement in Seeding Apparatus of Seed Planters.*

What we claim as new, and desire to have secured to us by letters patent, is constructing the tubular drill tooth with a hook shaped arm, in the manner and for the purpose herein set forth, by which the drill tooth is braced laterally whilst in operation, and hooked to the axle when not in operation, and by which the angle of the drill tooth may be changed at pleasure, by changing the position of the wooden pin in said arms, and by which the drill tooth may be folded towards the drag bar in backing the machine, or turning short round, whilst the drill tooth is in the ground, without breaking the wooden pin, said wooden pin resting upon the top of the drag bar, instead of passing through it, as herein fully set forth.

We also claim the spiral or any other form of spring, in such combination with the hopper, grate and seeding cylinder, or the distributing apparatus, as will make the said cylinder and grate, and hopper, self-adjustant, each to each, and to the others in case there should be a want of evenness or uniformity upon the surface of the seeding cylinder or distributing apparatus, for the purpose and in the manner above set forth.

SAMUEL PENNOCK.  
MORTON PENNOCK.

No. 7496.—*Improvements in Chargers attached to Fire Arms.*

What we claim, is the revolving ball magazine, in connection with the revolving cylinder.

ORVILLE B. PERCIVAL.  
ASA SMITH.

No. 7497.—*Improvement in Machinery for Measuring Pulp in the Manufacture of Paper.*

I claim, in combination with the measuring vessel herein described, the adjustable lid D, constructed with an opening in it, communicating with the pulp chamber in the cylinder, and with the atmosphere, through the small cylindrical chamber E, and the pipe F, the communication being closed and opened by the ball, in the manner substantially as described, for the purposes set forth.

HENRY POHL.

No. 7498.—*Improvement in the Boilers and Gearing of Locomotive Engines, for working Heavy Grades.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of operating the two horizontal



auxiliary driving wheels of locomotive steam engines, by connection with the auxiliary engine, when this is combined with the connection of the piston rods of the two auxiliary engines, with a crank shaft, having the cranks thereon at right angles, substantially as described, whereby the engines are made to alternate in their action, as specified.

I also claim the method, substantially as described, of establishing a connection between the dome and the forward end of the boiler, when this is combined with the extending of the flue tubes to the top of the boiler, as described, whereby the boiler is adapted to heavy grades, as described.

I also claim, in combination with the water ways surrounding the fire chamber, the water channel at the bottom of the boiler, as described, whereby a circulation of the water is established between the two ends of the boiler.

GEO. ESCOL SELLERS.

No. 7499.—*Improvement in Machines for Cutting Screws.*

What I claim, therefore, as my invention, and desire to secure by letters patent, is, substantially as herein described, of determining the pitch of the threads of wood screws by means of a leader, the threads of which are alternately engaged and disengaged from the teeth of a comb on a sliding bar, when this is combined with a relief and return cam, which, at the end of each threading motion, pushes the comb forward to relieve the leader before it is disengaged from the teeth of the comb, and then eases off the return motion of the comb bar, substantially as described.

THOS. J. SLOAN.

No. 7500.—*Improvement in Store Counters.*

I claim the construction of a store counter made in two parts, in the manner described, for the purpose of varying the capacity within, and at the same time to give better security in case of burglary, and aid transportation in case of fires, as herein set forth.

EVAN C. THOMAS.

No. 7501.—*Improvements in Joints for Compasses for Measuring.*

What I claim as new therein, and which I desire to secure by letters patent, is a compass joint, formed of two surfaces held together by centre screws, passing through a cap piece, substantially as herein described.

THEODORE ALTENEDER.

No. 7502.—*Improved Machinery for Double Folding Wide Cloth.*

What I claim as my invention, and desire to secure by letters patent, is the use and application of the rigid prong or extension piece A, to act upon the middle of the piece of the cloth in the process of folding it, in connection with the winding rollers C, D, to secure the exact double folding of the cloth, as above described.

ZACHARIAH ALLEN.

No. 7503.—*Improvement in Self-Weighing Machines for Grain, &c.*

What I claim therein as new, and which I desire to secure by letters patent, is the combination of a steel yard with a weighing box, having several compartments which receive the grain alternately, and when a certain quantity has been received the full compartment is discharged, being disengaged by the depressed position of the steel yard; at the same time, another compartment



is presented for filling; the apparatus being operated by the weight of the grain itself, so as to form an automatic weighing machine, by which, with the aid of a register or index the amount weighed is ascertained, substantially as above set forth.

W. W. W. H. T. BRAMBLE.

No. 7504.—*Improvement in Horse Powers.*

What I claim, and desire to secure by letters patent, is the eccentric pivot, which by being turned round allows the entire wheel to be withdrawn from the pinion, and when raised by the lever (*t*), the wheel can be tilted up for the purpose of taking the horses in or out, substantially as set forth.

JAS. L. CATHCART.

No. 7505.—*Improvement in Hill Side Ploughs.*

What I claim, is the combination of the adjustments of the hooked bar *r*, with those of the main brace *K*, whereby the pitch of the mould board may not only be increased or diminished; but the proper support of the upper part of the plough share, be maintained under any angle of pitch, all as specified. The same also admits of a change of the mould board, viz: the substitution of one larger or smaller.

I also claim the above described peculiar construction of the sword cutter with its groove, to receive the sharp edge of the land side, in combination with the notch in the land side of the share for receiving its lower end, and the notch or shoulder in the upper part of the sheath for receiving its upper end, substantially as specified.

MARK S. CHASE.

No. 7506.—*Improvement in Steam Boilers.*

What I claim as my invention, and desire to secure by letters patent, is :  
First. Arranging a series of bent water tubes within the flue space of a boiler, and connected at each end with the body of water in the boiler, substantially as herein described, by means of which the circulation of water is greatly increased, and the injurious effects due to expansion and contraction avoided, substantially as described.

Second. I also claim surrounding the crown sheet to which the ends of circulating tubes or their equivalents are attached with a rim, substantially as and for the purpose specified.

Third. I also claim extending the ends of the tubes, or the equivalent thereof, above the crown plate or roof of the fire-box, or any other plate or plates, one side of which is fire surface, to which they are attached when the other or lower end communicates with a water space or spaces below or beyond the plate to which the upper ends are attached, substantially as, and for the purpose specified.

I am aware that a patent was granted to Richard Prosser, in England, February, 1839. See Newton Journal, vol. 15, conjoined series, page 271, in which are represented circulating tubes with one end projecting above a plate. I do not claim such an arrangement, believing that described by me to be substantially different, and producing an entirely different effect.

Fourth and lastly. I claim giving a forced circulation to the water through the boiler or generator by mechanical means, substantially as, and for the purpose specified.

F. P. DIMPFL.



No. 7507.—*Improvement in Spring Saddles.*

I claim the springs *g, g*, or springs of any other form producing the same effect, placed between the moveable seat *B*, and the body of the saddle *A*, in such a manner as to be easily taken out and changed, as herein described.

GEORGE FISHER.

No. 7508.—*Improvement in Spike Machines.*

What I claim as my invention and improvement, and desire to secure by letters patent, is the method of imparting to the header *D*, a compound motion for first bending the end of the spike downward, and then moving it forward against the die, to form the hook end simultaneously with the operation of rolling the opposite end to the form of a wedge, with a roller of the same width of periphery, as the thickness of the spike, the said header being fixed to the end of a turning shaft *E*, passed through the lever *H*, and inserted into a segmental cogged or toothed plate *F*, made to match into a fixed segment rack *G*, by which the angle of the header is changed to correspond with the required form of the head of the spike, as the lever *H*, is vibrated by the motion of the cam shaft *M*, and the roller *U*, being moved in the arc of a circle as it rotates on its own axis, by being attached to the short arm of the bent lever *T*, whose long arm is attached to a wrist of the wheel or plate *W*, on the cam shaft *M*, as herein fully set forth.

MOORE HARDAWAY.

No. 7509.—*Improvements in Knitting Machines.*

What I claim as my invention, and desire to secure by letters patent, is:

First. The projecting and withdrawing the needles separately and singly, with their arrangement as described, by which I am enabled to knit closer work with stouter needles, substantially as described.

And secondly. In combination therewith, I claim the combination of the jack, the sinkers and depressers, substantially as described.

Thirdly. I claim the thread bearer (*V*,) having an extended sideways motion to and fro at each stitch, by which it lays the thread across the needle at each stitch, and returns with it to be ready for the next stitch.

Fourthly. I claim the spring vice for regulating the supply of thread to the needle opened by the rod (*w*,) substantially as described.

Fifthly. I claim the particular arrangement and combination of the several parts of the machine, by which their various motions are derived from a single crank and screw thread, substantially as described.

JOSEPH HOLLEN.

No. 7510.—*Improvement in Surveyors' Compasses.*

What I claim as my invention, and wish to secure by letters patent, is the application of the partial lens, or lens of reduced size, by means of which to view a cross-wire or a sight mark in optical contact with the object aimed at, either in the compass in gunnery, or for any other purpose requiring and using a sight, in the manner herein described, or any other, substantially the same, and which will produce the intended effect; especially do I claim also, the arrangement by which my compass sight is made susceptible of having either end used as the eye piece, and by which back and forward sights can be taken without disturbing the instrument.

I claim also, the convenient model of the compass to be used with the sight.



here described, viz: with a super imposed plate, and with the sight planted and supported upon it, and with the opposite readings at such places as are required, in order to obtain indirectly the reading of the occasionally concealed end of the needle, as in fig. 6 and 7.

JOHN LOCKE.

No. 7511.—*Improvement in Sizing Compounds for Warps or Yarns.*

What I claim, consists first, in the combination of the same, and the composition of animal tallow, oil, and caoutchouc, in or about, in the proportions specified, and for the purpose described. I also claim the combination of alcohol, with the composition of resinous alkaline, and other matters as specified, and for the purposes as above stated.

WILLIAM MALLERD.

No. 7512.—*Improvement in Machines for cutting Veneers, &c.*

What I claim as my invention, and desire to secure by letters patent, is the application to machines for cutting veneers and thin boards, of a sliding carriage, (or gate,) with knife and spring, substantially in manner and for the purpose herein described.

C. POPPENHUSEN.

No. 7513.—*Improvement in the Seeding Apparatus of Seed Planters.*

What I claim as my invention, and desire to have secured to me by letters patent, is—

First. The combination and arrangement of the segmental plates *h*, or valves secured together by circular rings and heads *i*, *i*, and arranged over the circumference of the cylinder *c*, adjacent to the opening therein, with the rotating cylinder, constructed as described, for the purpose of partially or entirely closing the openings in the cylinder, through which the seed passes to the depositing tubes, and thus regulate or check the discharge of the seed, as described and shown in the drawings.

Second. The arrangement and combination of the elliptical spring (*p*), rising and falling beam (*n*), pivoted beam (*m*), and hand lever (*f*), with the depositing tubes and drill teeth, by which all the depositing tubes and drill teeth may be raised and lowered simultaneously as described, without stopping the planting.

Third. The arrangement of segmental shields or covers (*w*), on either side of the upper portion of the rotating cylinder (*c*), in combination with the intermediate semicircular spouts or gutters *x*, beneath the cylinder, by which any waste of the seed is prevented, during the rotation of the cylinder or its discharge from the openings before passing the segmental shields or covers, as described.

GEORGE ROHR.

No. 7514.—*Improvement in feeding Apparatus for Straw Cutters.*

What I claim as new, and of my invention, and desire to secure by letters patent, is attaching the feed hand to the reciprocating knife gate, below the bottom of the feed trough, when said bottom is made with an opening next the knife, in which the feed hand operates, and through which all extraneous and hard substances descend before reaching the knife, so that whilst the said feed hand acts on the hay or straw, or whatever is to be cut, at its most compact part, it at the same time offers no obstruction to the insertion of the straw, as it stands entirely out of the way, and leaves the top open and free, the open-



ing in the bottom of the trough serving to rid the hay or straw, or corn stalks, or sticks, stones and other objectionable substances which would tend to injure the knives.

DAVID STILES, JR.

No. 7515.—*Improved Apparatus for regulating the contraction of Car Wheels.*

What I claim as my invention and improvement, and desire to secure by letters patent, is the combination of the apparatus for discharging the cooling fluid, centripetally against the outside surface of the hub, when constructed in the manner herein set forth, with the apparatus for letting the sand descend from around the hub and retaining it over and about the arms and rim, as described.

I likewise claim the combination of the bed plate, made with the curved conductor and slide, to confine and discharge the sand with the circular iron ring which forms and chills the tread of the wheel.

SAMUEL PRESCOTT.

No. 7516.—*Improved Steering Apparatus.*

What I claim as new in my invention, and desire to secure by letters patent, is operating or turning the rudder, by means of the socket C, so guided that it can be moved only in the direction of its length, and having helical threads or grooves fitting to corresponding grooves or threads on the head of the rudder post, and being moved in either direction, in the line of the axis of the rudder post, by means of a screw D, attached to and operated by the steering wheel, substantially in the manner herein described.

C. F. BROWN.

No. 7517.—*Improvement in Truss-Pads.*

What I claim as my invention, and desire to secure by letters patent, is the formation of the pads for trusses, braces, supporters, &c., as above described, to wit: made of shape in the boundary seen at figs. 5 and 6, (a rounded obtuse angle,) and the padding made somewhat hollow and fullest on the sides A, A, A, A, as seen in figs. 1, 3, and 4, adapted to bear under and outwards of the fulness of the abdomen, making a plano-concave pad, whether single or double, (the latter seen in figs. 7, 8, 9, 10.)

FRED'K M. BUTLER.

No. 7518.—*Improvement in fastening the Shoes of Hill-side Ploughs.*

What I claim therein as new, and desire to secure by letters patent, is the device for attaching and detaching the removable shoe, having the mould board hinged to it, and being fastened to the landside, substantially as herein set forth.

W. L. CHASE.

No. 7519.—*Improvements in the method of making Wrought Iron directly from the Ore.*

What I claim as my own invention, in the above process of making wrought iron direct from the ore, and desire to secure by letters patent, is deoxidising the ore, in a chamber which is so constructed and arranged, as to be heated by the waste heat, and at the same time prevent the product of combustion from coming directly in contact with the ore, (except during the time of charging,) and likewise permits the charge of deoxidised ore to descend upon the puddling floor or working bottom, without exposure to the atmospheric air,



the whole substantially in the manner and by the use of apparatus, substantially such as herein described.

ALEXANDER DICKERSON.

No. 7520.—*Improvement in Machines for raking and binding Grain.*

What I claim therein as new, and desire to secure by letters patent, is—

First. Gathering the grain and compressing it into a sheaf, substantially as herein set forth, by means of the rake and standards.

Second. Carrying the cord round the sheaf and holding the latter until the band is tied, by means of the curved lever *h*, and toothed arms *g'*, substantially as herein described.

Third. The employment of the split thimble and sliding hook, to aid in tying the band.

Fourth. Alternating the rake to gather the grain and compress the sheaf, by means of the spring, strap, and drum, substantially as herein set forth.

Fifth. Bridging the space through which the bound sheaf drops, to support the grain while it is being gathered, substantially as herein set forth.

J. E. HEATH.

No. 7521.—*Improvement in the application of Electro-chemical Printing in colors for taking Ayes and Noes.*

What I claim as new therein, and for which I desire to secure letters patent, is—

First. The mode, substantially as herein described, of imprinting words, letters, figures, &c., upon paper or other fibrous substances, by placing the paper or other substance, either chemically prepared or not, as above set forth, between two surfaces of a metal which is not acted on by the substances employed, on one of which the letters or figures are raised by passing a current of galvanic electricity through the prepared material, substantially as above described.

Second. I claim passing the electric current between metallic surfaces, as above described, through damp paper, otherwise unprepared, and afterwards applying a chemical solution, by which the effect of the electricity becomes visible wherever it has passed through the paper, for the purposes above described, telegraphing, &c.

ALBERT N. HENDERSON.

No. 7522.—*Improvement in directing Water upon Water Wheels.*

I claim the adjustable vertical water mouths or openings, arranged in combination with the outer or longest edge of the buckets, as described, whereby the greatest effect is obtained.

MARCUS B. ASHLEY.

No. 7523.—*Improvement in Machinery for turning out Wooden Bowls.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the moveable frames B and C, with the reciprocating frame D, carrying the curved cutter arm M, connected, and operating as described; also the combination of the curved cutter arm M, with the reciprocating frame D, for the purpose described, and also the cutters N, the spurs O, and the guards P, constructed as described, and connected and fastened to the curved cutter arms M, in the manner and for the purpose, substantially as herein described.

ADDISON EVERETT.



No. 7524.—*Improvement in Stanchions for Cattle.*

What I claim as my improvement, and desire to secure by letters patent, is the arranging of the stanchions in a vibrating frame, to accommodate the position of the animal when lying down.

I also claim the stanchion, or fall piece *g*, in connection with the stay cords *k*, by which means it is brought to an upright position when closing the stanchion *h*, thereby preventing an animal taking the place which is occupied by the stanchion *h*, when open.

I further claim the catch and spring *m*, *n*, fig. 4, to hold the stanchions in an upright position, in combination with the rope *o*, for releasing the cattle from confinement, as herein specified.

G. W. HATCH.

No. 7525.—*Improvement in the Attachment of Prison Locks*

What I claim as my invention, is the combination of the shed *e*, and its recess or hole *f*, or their equivalents, with the side of the cell door opening, and the double hinged arm *G*, and lock, substantially in manner and for the purpose of preventing strain on the lock by pressure against the cell door by a prisoner or person within the cell, as above specified.

EDWARD KERSHAW.

No. 7526.—*Improvement in attaching Hooks and Eyes to Paper Cards.*

What I claim as my invention, is the indenting or impressing the cards or sheets of paper in such a manner as to retain the hooks and eyes in their proper places upon the card, until they can be fastened; in whatever manner they may be finally secured.

I claim nothing in regard to machinery for forming the indentations, nor for the spring, or whatever may be used in fastening, nor for the manner of applying it by gum or paste.

PETER KIRKHAM.

No. 7527.—*Improvement in Churn Dashers.*

What I claim as my invention, and desire to secure by letters patent, is the double concave, perforated, discoid churn dasher, as herein described and represented, and for the purposes set forth.

JOSEPH MARSH.

No. 7528.—*Improvement in Distilling Spirits of Turpentine.*

What I claim as my invention, and desire to secure by letters patent, is the process as described, for distilling turpentine, so that the spirits of turpentine are distilled, and the rosin saponified, ready for soap making at one operation.

CHARLES J. MEINICKE.

No. 7529.—*Improved Valve Gear for Steam Engines.*

What I claim as new, and desire to secure by letters patent, is the combination of the fixed cam *E*, with its frame and rods, and the adjustable cam *I*, with its frame and rods, to which latter are attached the traversing and oscillating bar *n*, having secured to one end of it the rod *g*, and at or near its centre, the rod *H*, which actuate respectively, the eduction and induction valves, substantially in the manner herein described, forming together a simple valve motion, and one which enables the engineer to regulate the degree of cut-off at will.

GEORGE B. MILNER.



No. 7530.—*Improvement in Rubbing and Polishing Stone.*

What I claim as my invention, and desire to secure by letters patent, is attaching the stone D, to be faced, to a chain *a*, one end of which is attached to a windlass *c*, by which it may be lengthened or shortened; the stone being left free, so as to be continually changing its position on the bed, during the operation of rubbing, by which an uniform and even wear is produced on the bed, and a true face given to the stone, in the manner substantially as described.

ADRIAN OLCOTT.

No. 7531.—*Improvement in Atmospheric Churns.*

What I claim as my invention, and desire to secure by letters patent, is the construction of the air tube *b*, *c*, *d*, *d*, in combination with the plungers and partition, as set forth, whereby the cream is thoroughly agitated, and intimately mixed with atmospheric air, by forcing it alternately to the opposite sides of the partition, through branches of the air tube, as herein set forth.

JOHN O. NEIL.

No. 7532.—*Jigger Windlass.*

I therefore claim as new, and desire to secure by letters patent of the United States—First. The application of the double acting pawls 3, 3, ratchet 4, disk *e*, socket *f*, and handspike *g*, with or without the winch-head D, whereby the power is applied to the horns *d*, *d*, to rotate them in either direction, as required, said application and arrangement being a combination of the double acting winch, as described in my patent of 29th May, 1849, and the cable lifting horns described in my patent of 21st March, 1848, heretofore referred to, whereby this combination of these two previously patented inventions effect new and useful purposes, not contemplated and not attainable by either of the inventions separately, substantially as described and shown.

CHARLES PERLEY.

No. 7533.—*Improvements in Apparatus for sizing and drying Cotton Batting.*

What I claim as my invention and improvement on all other modes of glazing cotton wadding, and desire to secure by letters patent, is—First. Doubling or turning the ragged and uneven edges of the bat of cotton, as it comes from the carding engine, and pressing them down to form a smooth selvage, as set forth, by means of the curved plates *a*, in combination with the cylinders *b*, *c*, as described, or other equivalent means.

Second. I claim heating and ironing the surface of the bat of cotton, previous to being glazed, for the purpose herein set forth, whether performed by the means herein described, or other equivalent means.

I likewise claim making the floating cylinder with check rings, or their equivalents, in the manner and for the purpose described.

I claim passing the bat through a space between the floating cylinder and compressive cylinder, and imparting the sizing to the bat of cotton without pressure, as described.

I claim making the drying chamber a double inclined plane, in combination with the chimney, constructed as aforesaid, for the purpose of increasing the circulation. I also claim the peculiar combination of the heating, selvaging, ironing, and glazing, and drying apparatus, by which the bat of cotton, as it comes from the carding engine, is selvaged, ironed, glazed, and steam dried by a continuous process, as herein fully set forth, the sizing vat being placed



directly beneath the compressive cylinder, so that the sizing can be introduced fresh from the vat to the bat, as it comes from the ironing cylinder, as described.

E. P. RIDER.

No. 7534.—*Improvement in Purifying Coal Gas.*

What I claim as my invention, and desire to secure by letters patent, is the mixture with lime of coke dust or breeze, charcoal dust, or other carbonaceous substance, for the purpose of acting mechanically in the separation of the particles of lime, and at the same time acting chemically in removing various impurities from the gas, (which cannot be separated by the ordinary methods of purifying gas,) substantially as above set forth.

JOS. SABBATON.

No. 7535.—*Improvements in connecting Hubs with Axles.*

What I claim as new, and of my own invention, and desire to secure by letters patent of the United States, is the application of the half boxes *d*, and *d*, with the semicircular lip 5, and rib *e*, constructed to enter the grooves 4 and 8, near the end of the axle box *c*, said boxes being secured together and connected to the axle bar by any competent means, and said ribs, grooves, and boxes operating as a substitute for a collar on the axle, and to hold the axle box and wheel on the axle, and also to keep dust out of the parts, substantially as described and shown.

ELIPHALET S. SCRIPTURE.

No. 7536.—*Improvement in the Arrangement of Pressure and Feed Rollers in Planing Machines.*

What we claim as new therein, and desire to secure by letters patent, is connecting the moveable weighted pressure rollers with the stationary ones by oblique links, in combination with the additional rollers (*f'*), the whole arranged substantially in the manner and for the purposes set forth.

CHARLES A. SPRING.  
PETER BOON.

No. 7537.—*Improvements in Machines for forming Tubes of Sheet Metal.*

What we claim as our invention, and desire to secure by letters patent, is supporting the forming roller (3,) upon the short ends of the bent levers (*G*, *G*), in combination with the upper roller (2,) supported by springs, substantially in the manner and for the purposes herein described.

JOSEPH STOUT.  
JAMES T. STANTON.

No. 7538.—*Improved Bolt and Rivet Machine.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Gauging the length of the shank, after a head has been formed on the end, by pushing the head against a gauge beyond the header, which has a lateral motion to allow it to pass by, substantially as described, in combination with the operation of cutting off the shank at such distance from the gripping dies, as by the same operation to determine or gauge the length of rod or wire, which shall be left projecting beyond the gripping dies for forming the next head, substantially as described.

And lastly, cutting off the rod or wire, after the head has been formed, by



the return lateral motion of the header, in combination with the rest, substantially as described, the edges of the rest and heading die, being formed to answer the purpose of shears, as herein described.

WM. E. WARD.

No. 7539.—*Improvement in Car Seat Backs.*

What I claim as my invention, and desire to secure by letters patent, is the forming of the backs of car seats, of double curved plates of metal attached by the ends to the arms of the seat, made to embrace both sides of the end pieces to which they are pivoted, and on which the car seats are reversed, formed, stayed, and braced, substantially in the manner and for the purpose herein specified.

THOS. E. WARREN.

No. 7540.—*Improvement in the Counter-twist Speeder.*

What I claim as new, and desire to have secured to me by letters patent, is making the shaft with a serrated groove *d*, in combination with the reduced portions *c, c*, of the shaft adjacent to said groove, wherein the roving runs from the twisting band to the bobbin in the manner and for the purpose herein fully set forth.

I also claim the combination of the spring *g*, and pendent tapered arm *f*, with the vibrating bobbin arm *i*, arranged and operated in the manner and for the purpose herein set forth, or in any other way which may be considered substantially the same, and by which analogous results shall be produced, that is to say, any arrangement wherein a rubbing pressure is imparted to the arms or their equivalents, containing the journals of the bobbin for producing the effect herein stated, said arrangement preventing the sudden rebounding of the bobbin on the shaft, when it becomes uneven from any cause, which the mere spring and weight applied to the bobbin axle or its arms, will not prevent, as I have fully tested by experiment; the spring when used alone being too elastic, and the weight too dead, whereas, the combination of the two, causes the bobbin to rise and fall gradually, as herein fully set forth.

JESSE WHITEHEAD.

No. 7541.—*Improvement in Fastenings for Bureau Draws.*

What I claim as of my own invention, and desire to secure by letters patent of the United States, is—

First. The metallic strip or its equivalent, constructed with the notch for receiving the fastening bolt, as set forth.

Second. The locking bolt operated by the opening or closing of any one of the drawers, for the purposes herein named, the whole being constructed, substantially in the manner herein set forth.

GEORGE WODE.

No. 7542.—*Improvement in the Manufacture of Raw-hide Whips.*

What I claim as my invention, is the above described improvement, in the manufacture of whips, or a whip having its external covering as well as its turk's heads or buttons, made in whole or in part of corrugated strips or bands of raw hide, laid or woven together, and on the handle or stock, substantially as herein before specified.

THOMAS J. BARNES.



No. 7543.—*Improvement in Scrapers used by Cabinet Makers.*

What I claim as my invention, and desire to secure by letters patent, is the scraper stock set in a frame for holding and guiding the scraper, so that the forward end only of the frame shall rest on the surface to be scraped, and thereby enabling the workman to manage the tool with the whole hand, apply a steady force instead of using the fingers only, as heretofore, for that purpose.

Second. I also claim reversing the position of the scraper stock and plate in the stock frame, whereby I am enabled to use both feather edges or corners of the plate successively, without taking the plate from the stock, as herein set forth.

HIRAM CARVER.

No. 7544.—*Improvement in Seed Planters.*

What I claim therein as new, and desire to secure by letters patent, is the combined operation of filling and discharging the revolving cups or cavities, in the planting rollers Z, Z, by a single blow of the arms F, F, on the said rollers, substantially as herein set forth.

EDSON HART.

No. 7545.—*Improvement in Ballot Boxes.*

What I claim therein as new, and desire to secure by letters patent, is the arrangement, substantially as herein described, of a moving band or tape, imprinted with numerals, and actuated by pedals, ratchet movement, and rollers or other equivalent device, in connection with spring detention latches, and a liberating brake or their equivalents, so that while the number polled for each respective candidate is exhibited by appropriate tape, each pedal as it is brought into play by the voter, is detained by its respective latch, until again liberated by the attending officer, thus effectually preventing the duplication of votes.

JOSEPH ADDISON HILL.

No. 7546.—*Improvement in Processes for Amalgamating Gold.*

What I claim as my discovery, and desire to have secured to me by letters patent, is saturating or dampening the sand or quartz, with which gold is found, with a solution in soft water of chloride of sodium and tartaric acid, mixed in about equal proportions, and applied to the sand, &c., prior to the introduction of quicksilver, to effect amalgamation with the gold.

CALVIN C. KNOWLES.

No. 7547.—*Improved method of making Barrels for Fire Arms.*

What I claim as my invention, and desire to secure by letters patent, is making barrels for fire arms, with a double seam or weld, from two bars of metal previously rolled into a semi-cylindrical form, the whole operation being conducted as herein described.

JESSE PANNABECKER.

No. 7548.—*Improvement in Hanging and Operating Gates.*

What I claim as my invention, and desire to secure by letters patent, is the manner of hanging and operating the gates, substantially as described.

THOMAS PARKINSON.

No. 7549.—*Improvement in Tenoning Machines.*

What I claim therein as new, and desire to secure by letters patent, are the planes for cutting the tenon, whose irons are made to turn alternately from and



towards the faces of their respective stocks, so as alternately to cut and clear the lumber on which they are acting.

E. M. SHAW.

No. 7550.—*Improvement in Churn Dashers.*

All that I claim, and desire to secure by letters patent, is the combination of the funnel shaped tubes B, radial wings or plates D, inclining upward and outward, directly over the ends of the tubes B, with the circular cap plate or disk F, for the purpose as described.

R. S. SHERMAN.

No. 7551.—*Improvement in Harness Saddles.*

What I claim therein as my invention, and desire to secure by letters patent, is the combination of the separated elastic plates C, C, with the skirt portions B, B, of the casting A, B, B, and the pads F, F, substantially in the manner herein set forth, for the purpose of causing the pads to have a springy and equable bearing upon a horse, and to adapt themselves to horses of different sizes and conditions.

ROBERT SPENCER.

No. 7552.—*Improvement in Machines for Beating Gold.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the adjustable differential cams (H,) with the pendulums, by means of which the packet is shifted under the hammer, so as to regulate the distribution of the blows upon it, as herein set forth.

WM. VINE.

JAS. H. ASHMEAD.

No. 7553.—*Improvements in Machinery for dressing Weavers' Harness.*

What I claim therein as my invention, and desire to secure by letters patent, is the within described combination of the size or glue receptacle K, k, and the rotating brushes y, y', with each other, and with the shafts B, B', the screw shafts C, C', the sliding rod E, the lever v, the clutch X, the pulleys W, Y, and the drawing pulley Z, by which the brushes y, y', are made, simultaneously to rotate on their axes, and to alternately traverse from one end of the harness A, to the other, (or any portion of it,) and deposite the size or glue evenly and smoothly upon the threads of the harness, substantially as herein set forth.

In combination with the size or glue receptacle K, k, and the rotating and reciprocating brushes y, y', above set forth, I also claim the imparting a reciprocating movement to the frame G, G, in which the harnesses A, A, are placed simultaneously with the combined movements of the said brushes y, y', substantially in the manner herein set forth.

I also claim the making the sliding frame G, G, of such shape and capacity as to receive two sets of harness A, A, when it is combined with the shaft D, the pulley Q, the crank or lever q, the elastic lever R, the pitman S, and the crank wrist t', substantially as herein set forth; by which without stopping the machine, a dressed harness can be removed from the frame, and an undressed harness secured in its place, whilst another harness is being dressed with size or glue in the opposite receptacle of the said frame, substantially in the manner herein set forth.

KASIMIR VOGEL.



No. 7554.—*Improvement in Churn Dashers.*

What we claim as our invention, and desire to secure by letters patent, is the double curved, shaped dasher H, with the groove pieces J, J, and N, N, in combination as herein described, for the purposes herein set forth.

WILLIAM WALKER.

MATTHEW C. WALKER.

No. 7555.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is:

1st. The manner of forming the front *d*, wing flues (*a, a*), on either side of the stove, by recessing the centre of the front plate above and beneath the plate forming the hearth, and bottom of the fire chamber, and inserting plates (*e, e*), to form the insides of the flues (*a, a*), in the fire chamber, so that they can be re-placed when burnt out without disturbing the sections of said plates below the hearth, as described.

JAMES WHITE.

No. 7556.—*Improvements in Tenon Bits.*

What I claim as my invention, and desire to secure by letters patent, is the combination of converging slides with a pair of planes, the latter being combined with the former in such manner, that by pressure and turning, they are caused to approach each other and reduce the extremity of the spoke to which they are applied, substantially as herein set forth, the slides and planes being turned by a hand-brace or by machinery.

ELI K. WISELL.

No. 7557.—*Improvement in Friction Clutches.*

What I claim as new, and desire to secure by letters patent, is the sliding collar *k*, connected to and in combination with the nut *g*, substantially in the manner and for the purposes herein specified.

NELSON BARLOW.

No. 7558.—*Improvement in Cylinder Printing Presses.*

That which I claim, is constructing a printing machine, in which the form or forms of types, or blocks are placed on, or secured to the inner or concave surface of a cylinder or drum, which is made to revolve or carry the form or forms secured thereto, from the inking roller to the printing or impression cylinders, all of which parts are mounted inside the cylinder or drum.

Second. I claim the methods above shown, and described of the making the inking rollers or balls of printing presses or machines.

BARTHOLOMEW BENIOWSKI.

No. 7559.—*Improvement in the Manufacture of Candles.*

What I claim therein as new, and desire to secure by letters patent, is the arrangement and manner of operating the knives, by which the cylinder of fat, with its central wick, is cut into suitable lengths for candles, and the fat removed from the end of the wick.

I also claim the device for regulating the length, and delivering the candles, substantially as herein described.

JAS. G. DAVIS.



No. 7560.—*Improvement in Instruments for Vaccinating.*

What I claim as my invention, and desire to secure by letters patent, is the sliding cylinder D, in combination with the thumb key F, spring M, and piston O, for the purposes herein described and set forth.

JUNIUS F. FOZER.

No. 7561.—*Improvement in Splints for Fractures.*

What I claim as my invention, and desire to secure by letters patent, is the cutting out a portion of the splint, to afford an opportunity for dressing as often as may be necessary, the upper and lower portions of the splint being kept firmly united by means of the brace B, so as by extensions and counter extensions, to keep throughout the treatment, the proper relative position of the parts concerned, the slide being re-placed after each dressing, or any other device, substantially the same.

ADAM HAYS.

No. 7562.—*Improvement in Weighing Machines.*

What I claim as my invention, and seek to secure by letters patent, is the iron frame, together with the skids and regulating screw, used in connection with a weighing beam, as described in the foregoing specification, and represented in drawings accompanying this.

GEO. HOUSTON.

No. 7563.—*Improvement in Packing Boxes and Axles.*

What I claim as new, and desire to secure by letters patent, is the combination of the metallic packing ring E, having is outer periphery of conical form, the arched springs F, F, having their ends inclined to fit the said ring E, and the regulating screws *h, h*, with the journal box C, and axle A, in the manner and for the purposes, substantially as herein described.

WM. H. HOVEY.

No. 7564.—*Improvements in Pentagraphs.*

What I claim as new, and for which I desire to secure letters patent, is the instrument, constructed and arranged as above set forth, consisting of a pencil moving parallel with the eye tube, with which it is connected as herein described, and marking on a vertical plane, or a plane, parallel with their axes of horizontal motion, such objects as the sight through the eye tube passes over.

ALLEN JUDD.

No. 7565.—*Improvement in Bench Hooks.*

What I claim as new in my invention, and desire to secure by letters patent, is forming the head *c*, with any suitable number of edges of any required form, to suit various kinds of work, and having the spindle, of which the head forms part, grooved and fitted in a socket, set at an inclination to the bench, so that any edge of the head can be set to the work and secured by a spring catch, and whatever edge is turned to the work, will be higher than the back or opposite edge as herein set forth.

W. B. KEAN.

No. 7566.—*Improvement in Apparatus for Regulating the Setting of Boxes in Wagon Tops.*

I claim the combination and arrangement of the rules G, G, K, K, the rods



H, H, the pins *h, h*, the adjusting screws I, I, and the holdfast bolts J, J, arranged and adjusted upon a frame, in the manner and for the purposes, substantially as herein described.

And I also claim the adjustable rule M, sliding in the swinging bar L, and attached to the same frame with the before described combination, in the manner, and for the purpose herein set forth

A. McKINNEY.

No. 7567.—*Improvement in Ornamenting Textile Fabrics.*

What I claim as my improvement, is the new or improved ornamental fabric or manufacture, made substantially as specified, viz: having any ground suitable or unsuitable for receiving and exhibiting bright color or colors when imprinted thereon, and having figures, stripes, or other portions of surface floated over the said ground, in material and color, suitable for representing such bright color or colors, and having such bright color or colors printed on the said floated surfaces.

ROB'T MILLIGAN.

No. 7568.—*Improvement in Piano Fortes.*

What I claim as of my own invention, and desire to secure by letters patent of the United States, is combining two sets of strings operated by separate actions with one and the same sounding board, whereby I am enabled to produce greater effects, both in quality of tone and in power than heretofore, and also to maintain the unison of the notes, and the tune to a degree not possible before, the whole being constructed and operated, substantially in the manner described herein.

JAS. PIRSSON.

No. 7569.—*Improvement in Ship Ventilators.*

Firstly. I claim the ventilating chamber, constructed in the manner substantially as above described, having a tube or air passage, communicating with the cabin, or between decks of a ship or other vessel, entering it at *a, b*, figs. 2, 3 and 4, and provided with a register, represented by *a, b*, in fig. 1, either for the purpose of admitting pure air, by long tubes, to the lower parts of the cabins, or between decks, or for carrying off the ventilated air by short tubes from their upper parts.

Secondly. I do not claim the use of a float valve in the ventilating tube, irrespective of the manner of applying them, but I claim having the two float valves A and B, attached together, in the manner substantially as described, and each acting independently of the other, upon a separate seat in the ventilating chamber, so that any water passing one valve, may be shut off by the other.

WARREN ROBINSON.

No. 7570.—*Safety Apparatus for Steam Boilers.*

What we claim as our invention, and desire to secure by letters patent, is the application of a rope, made of any combustible material (using for this purpose, wool as prepared in the manner before noticed, or any other material which will answer the intended effect,) to the upper surfaces of one or more tubes or flues of a boiler, which, when said tubes or flues are uncovered of water, will burn off, or part in the manner as before described, for the action of the excessively heated metal and surcharged steam, which rope is connected with, and by its parting actuates the apparatus herein described, or any part



thereof, for the purpose either of giving alarm, or putting in action means of safety, or both, substantially as herein described.

JOHN C. TENNENT.

JNO. WORKMAN.

No. 7571.—*Improved Serving Mallets.*

What I claim as new in my invention, and desire to secure by letters patent, is—First. Attaching friction rollers to the periphery of a serving mallet, substantially in the manner and for the purposes herein described.

Second. Making the groove or face (c,) deeper or larger at the part (h,) which fits the served part of the rope, in the manner and for the purposes substantially as herein described.

THOMAS BATTY.

No. 7572.—*Improvements in Gun Harpoons and Lances.*

What I claim as my invention, and desire to secure by letters patent, is attaching a tail of cords, (or their equivalent,) to gun lances, substantially in the manner and for the purpose herein set forth.

I also claim attaching the button to the shank of gun harpoons or lances, in such manner that when the lance or harpoon is discharged from the gun, the button will drop off, being thereby prevented from retarding the flight, and from deflecting the lance or harpoon from the line in which it is projected from the gun, substantially as described.

ROBERT BROWN.

No. 7573.—*Improvement in Obstetrical Supporters.*

What we claim as new and useful in our invention, and desire to secure by letters patent, is the combination, in the manner described, of the sliding plate C, with the back pad B, which is connected to the seat, for the purpose of enabling the bearing of the instrument to be moved higher up or lower down the back, without disturbing the patient.

F. H. CHASE.

ADAM WESTON.

LEANDER BABBIT.

No. 7574.—*Method of Propelling Boats in Shallow Water.*

What I claim therein as new, and desire to secure by letters patent, is—

First. The combination and arrangement of the setting pole E', sliding in the sheath E'', with the spring bolt y, and cords 3, 3, 3, and 6, for the purpose of shortening or lengthening the setting pole, substantially as herein fully described and shown.

Second. The manner herein described, of checking or snubbing the boat by means of a chain or cord attached to the foot of the setting pole, and passing over pulleys to a windlass placed in the stern of the boat near to the helm, as herein described.

JOHN DOUGHERTY.

No. 7575.—*Improvement in Compound Wagon Boxes.*

What I claim as my invention, and desire to secure by letters patent, is making the fastenings of a compound wagon body by combining with screw bolts, so jointed to the axles, frame or body of the carriage, as to be laid down or set up at pleasure, two cross pieces to each pair of bolts, with pres-



sure nuts above the upper, and sustaining nuts beneath the lower cross bar, whereby the whole load may readily and easily be secured, or the lower part may be released and withdrawn, without disturbing that which is above it, substantially as herein set forth.

IRNLA DRAKE.

No. 7576.—*Improved Steam Boiler.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of pendent water vessels (D,) in the fire box, in connection with water tubes (e,) which pass along the flue, and are connected at one extremity with a water space near the back of the boiler, and at the other with the water vessels at the fire box, substantially as herein set forth.

RICHARD E. DIBBLE.

No. 7577.—*Improvement in changing Rotary Motion into Reciprocating Motion.*

What I claim as my invention, and desire to secure by letters patent, is the mechanical arrangement and combination of parts, by which I convert the rotary motion of the wheel A, into a reciprocating movement of the churn dasher rod W, to wit: by means of the action of the lugs *a, a*, that project from the face of the said wheel A, upon the forked rocker K, *l, m*, and the vibrating beam G, when aided by the inclined planes *t* and *r*, substantially in the manner herein set forth.

ISAAC D. GARLICK.

No. 7578.—*Improvement in Machines for Cutting Hemp.*

What I claim as my invention, and desire to secure by letters patent, is the attaching a series of blades upon an arm, back to back, in a V form, their edges elevated in order to give a smooth glancing stroke upward, through the stalk of hemp, after manner of the cutting performed by the common scythe in hemp and grain.

I claim the introduction and use of a cleaning shear over the crotchet or junction of the blades (to remove such hemp as may be imperfectly cut or pulled up,) substantially in the manner as herein set forth.

I claim the method of separating and bunching the hemp after it has been cut, by means of a wedge or inclined plane, and a revolving cone.

I claim the invention and use of the revolving rack as a substitute for the over-head reel in supporting the hemp while being cut.

J. LOCKE HARDEMAN.

No. 7579.—*Improvement in Fulling Mills.*

What I claim as my invention, is so arranging a vertical fluted or ribbed cylinder, and fluted or ribbed concave, that the rotation of the former on its axis, shall cause the goods to be fulled to assume a cylindrical form, and to rotate on its own axis, by means of the friction of the two fluted or ribbed surfaces acting upon and sustaining in its position, the cloth or goods, as set forth.

JOHN C. MILLAR.

No. 7580.—*Improvement in Machines for Cutting Crackers.*

I claim the combination of the three following elements: First. The constant velocity of the breaking rollers.



Second. The number of strokes of the cutters adjustable thereto, by means substantially as described; so that within certain limits they may be varied in relation to the number of revolutions of the feed rollers.

Third. An adjustable feed to the apron, derived from the shaft carrying the cutters, so that it always makes the same number of strokes, but each stroke may be varied in length, by which, in the same machine, I am enabled to cut crackers of any given size.

WILLIAM R. NEVINS.

No. 7581.—*Improvement in preparing the face of Metallic Types, Engraved Plates, &c.*

What I claim as my invention and discovery, and desire to secure by letters patent, is the plating or coating of the surfaces of metallic printing types, stereotype plates or other printing plates, whether cast or engraved, with an additional coat of metal, by means of galvanic electricity, in the manner and for the purposes described.

L. VANDER VEER NEWTON.

No. 7582.—*Improvement in Hot Air Registers.*

What I claim as new therein, and which I desire to secure by letters patent, is the method of moving the dampers in registers or ventilators, by means of the slider (d,) and the oblique bars (g,) with their several forms and parts, substantially as described, in combination with the oblong dampers hung in the middle of their width, in the manner and for the purpose set forth.

G. POLLOCK.

No. 7583.—*Register for Steam Boilers.*

What I claim as of my invention, and desire to secure by letters patent, is connecting the gauge rods with the gauge cocks, in such manner as herein described, that the pressure of steam and height of water shall be registered each time the gauge cocks are tried, the register indicating at the same time, the period of time of trying of the gauge cocks by opening and closing them.

JAS. D. RICE.

No. 7584.—*Machine for cutting Sheet Metal, &c.*

What I claim as my invention, is the toothed rack, or its equivalent, (applied to the bar B,) and a system of one or more gears, or the mechanical equivalents thereof, (applied to the cutter wheel, and made to engage with the said rack, or equivalents therefor,) in combination with the said bar B, the cutter wheel and its sliding carriage; the same being substantially in the manner as above described, and for the purpose of causing the cutting periphery of the rotary knife to travel around faster than the knife moves horizontally, and to thereby make said knife cut with a drawing stroke.

I also claim the combination of the swinging frame and gauge contrivance, or equivalents therefor, with a sliding carriage, its cutter wheel and the slide bar and straight cutting edge, as substantially specified, the same being for the purpose of enabling me to cut either circular or curved work, as described, and of any diameter or dimensions capable of being produced by the machine of whatever size it may be made.

STEPHEN P. RUGGLES.



No. 7585.—*Improved opening and closing Bucket for Paddle Wheels.*

What I claim as of my own invention, and desire to secure by letters patent, is—First. The formation of each of the blades composing the bucket, so that their inner or closing ends shall be heavier than the outer ends thereof, when combined with a stop or stops, substantially as herein described, thus effecting the closing together of the same by the action of gravity before entering the water, as set forth.

And secondly. I claim curving the inner edges so as to ensure the closing of said edges together, by the action of the water while backing, and thus complete a sufficient bucket for that purpose, substantially in the manner described herein.

GEO. TINGLE.

No. 7586.—*Improvements in Machines for heading Bolts, Rivets, &c.*

I am aware that spikes and bolts have been headed in a box, I therefore do not claim the box with the moveable header therein, but what I do claim as my invention, and desire to secure by letters patent, is attaching to or forming in the lower part of the box or holder, a flaring or bell mouthed cavity, such as R, which embraces the tapered ends of the dies, when the box is down or in a vertical position, and clamps them firmly together, while at the same time the cavity acts as a guide to cause the heading box to assume its proper position, and prevents the metal from being forced out between the ends of the dies and bottom of the cavity in the box, during the operation of heading.

JOHN VAN BROCKLIN.

No. 7587.—*Improved method of carrying Vessels over Shoals.*

What I claim as new therein, and which I desire to secure by letters patent, is the mode or method of transporting a vessel across shoals or bars, by means of a camel, having an unyielding platform for the vessel to rest on, and likewise provided with a bow, as herein described, the vessel being partly water borne, and partly supported by the camel.

J. A. WINSLOW.

No. 7588.—*Improvement in Processes for making Stannates of Potash or Soda.*

I claim as of my said invention, the mode of producing a stannate of soda, by heating a mixture of tin ore and sulphuret of sodium; and a stannate of potash by heating a mixture of tin ore and sulphuret of potassium, and afterward separating the sulphur from these mixtures respectively, by means of a metallic oxide, in manner herein before described.

JAMES YOUNG.

No. 7589.—*Improvement in Expansible Bitts.*

What I claim as new, and desire to secure by letters patent, is the herein described expansible bitt, in combination with the single or double collar or tube, constructed and operating in the manner, substantially as herein set forth.

C. L. ADANCOURT.

No. 7590.—*Improvement in Obstetric Chairs and Supporters.*

What I claim in the foregoing as my invention, and desire to secure by letters patent, is an obstetric chair with its seat composed of sections, hinged together, substantially in the manner and for the purpose herein set forth.



I also claim a chair back, hinged to the seat in such manner that it can turn both horizontally and vertically, substantially in the manner herein set forth.

I likewise claim the combination of the stirrups with the abdominal pad, substantially in the manner and for the purpose herein set forth.

ASA BLOOD.

No. 7591.—*Improvement in Turning up the Steps of Omnibuses.*

What I claim, is the turning up of the step, (it being properly prepared for the purpose,) by the action of the spiral or other spring, upon the stepping off of the passenger, and the withdrawing of the driver's foot, and its connection with the brake apparatus, thus preventing boys or others from riding on it, the whole being attached to the body of the carriage, and operating substantially as fully set forth in the accompanying drawings and model.

STEPHEN BURDETT.

No. 7592.—*Improvement in Machines for Cutting Straw.*

What I claim, and desire to secure by letters patent, is—First. The manner of hanging the knives to the wheel, as described.

Second. Forming the knives with a hook shaped end, in the manner and for the purpose set forth.

Third. The collar on the projecting end of the mouth-piece, forming a support for the detached end of the knife to rest against, as described.

HARRY CAMP.

No. 7593.—*Improvement in Revolving Coal Grates.*

What I claim as new, and desire to secure by letters patent, is the manner of arranging bars or flanges B, B, around the cylinder, at an angle of any desired degree from the axis of the cylinder, so as to move the coal alternately in opposite directions, the same forming a fire grate, in the manner and for the purpose, substantially the same as herein described and represented.

JOHN B. CHOLLAR.

No. 7594.—*Improvement in Self-generating Gas Lamps.*

What we claim as our invention, and desire to secure by letters patent, is the extension of the wick into a ball or cavity, where the gas may be generated by means of jets, as above set forth.

SHARPLESS CLAYTON

YARNALL BAILY.

No. 7595.—*Improvements in Coal Stoves for Roasting and Boiling.*

What we claim herein as new, and desire to secure by letters patent, is—

Firstly. The arrangement, after the manner and for the purposes herein described, of a grated or other more or less open fire back, whereby a roasting surface is presented to the interior of a stove.

Secondly. The provision, substantially as described, of dampers, whereby the roasting surface may be regulated or entirely closed up, or opened at pleasure.

Thirdly. The falling grate g, arranged and constructed, substantially as described, so as to enable extension horizontally, of the body of the fire, for a boiling surface.

Fourthly. The fire door having hopper sides, and forming, when extended, a canopy for the conduction of effluvia.



Fifthly. The hopper or funnel shaped door, as arranged and here applied for the insertion of fuel.

THOS. G. CLINTON.

GEORGE H. KNIGHT.

EDWARD H. KNIGHT.

No. 7596.—*Improved Lock for Fire Arms.*

What I claim as new, and desire to secure by letters patent, is the seer *j*, in combination with the pin and shoulder on the trigger, by which arrangement the hammer, after being brought back by the pressure of the finger upon the trigger, is held in its position by the seer, while the trigger passes forward, and the piece is discharged by a light touch of the finger upon the trigger, securing deliberation and certainty of aim, or may be discharged by one continuous pressure of the finger upon the trigger, at the pleasure of the person using the same. And in these claims I wish to be understood that I do not confine myself to the precise arrangement of the parts herein described, but shall vary the same at pleasure, while I attain the same ends, by means substantially the same.

NATHAN B. COOK.

No. 7597.—*Improvement in Shirt Studs and Buttons.*

What I claim in the foregoing as my invention, and desire to secure by letters patent, is constructing the shanks of shirt studs and buttons, in the manner and for the purpose herein set forth.

BENTON P. COSTON.

No. 7598.—*Improvement in Stoves with Circular Shaking Grates.*

What I claim as new, and desire to secure by letters patent, is casting the seat (G,) of the fire box separate from the top plate (C,) of the ash box, having the bar (D,) carrying the centre or pin (*d*), for supporting the grate, cast with and forming part of the top plate (C,) of the ash box, substantially as described, and for the purposes set forth.

EDWARD B. FINCH.

No. 7599.—*Improvement in Cast Iron Car Wheels.*

What I claim as my invention, and desire to have secured to me by letters patent, is making the two plates which connect the hub and rim of a cast iron railroad wheel, in a series of lateral arching sectors connected by the curved partitions *c*, *c*, &c., in the manner and for the purpose herein above specified.

ALBERT FULLER.

No. 7600.—*Improvement in detaching Horses from Carriages.*

What I claim as my invention, and desire to secure by letters patent, is the application to buggies and other vehicles, drawn by horses and other draught animals, of a new and useful improvement on the swingle tree, which I entitle the safety swingle tree, together with its apparatus, consisting of a lever and ring bolt, a grooved headed screw bolt, a flat headed screw bolt, a force spring, and two stirrups combined, as above described, which, upon the ring bolts being raised as above described, will allow the horse to become unhitched and to pass off, freely from the same and every part thereof, without danger to the same, or to persons therein contained, using in the construction of the same, wrought iron or any other durable material that will ensure the desired object.

JOHN W. HARRISON.



No. 7601.—*Improvement in Grain Dryers.*

What I claim as my invention, and desire to secure by letters patent, is the arranging a series of drying plates, one above another, connected by passages as described, in connection with the vertical shaft and arms thereon, curving alternately in opposite directions, combined and arranged in the manner and for the purpose herein fully set forth.

JOHN R. HOOPES.

No. 7602.—*Improvement in the mode of Cleaning and Drying Gum Elastic or Cloth Bands in Calico Printing.*

I claim as my invention, the arrangement of the rollers and vat, above described, for washing the India rubber bands or other endless blankets, used in calico or other printing; said rollers being only partly immersed in water, and other parts arranged and operated, as set forth.

JAS. HUNTER.

No. 7603.—*Improvement in Saws.*

What I claim as my invention, and desire to secure by letters patent, is my improved saw teeth, constructed and operated, substantially as herein described and represented, viz: the cutting edges of the teeth inclining outwards from plane or curved surfaces *a, a*, a distance equal to the thickness of chip that each tooth is intended to remove from the wood, and being prevented from taking a deeper hold upon the wood, at the same time that they are strengthened by the said outer surfaces (*a, a*), in consequence of these surfaces (*a, a*) being in a line with each other, and parallel or nearly so, with an imaginary right line or circle, drawn over and touching the points of the saw teeth.

HAZARD KNOWLES.

No. 7604.—*Self-acting adjustable Feed-gear for Drilling Machines.*

What we claim as our invention, and desire to secure by letters patent, is the combination, substantially as described, of the splined screw *x*, the splined shaft *b*, the smooth wheel *r*, the toothed wheel *y*, carrying a nut, the arm *l*, the catch *n*, the small arm *o*, the spring *p*, and the segment *q*, so as to form a self-acting adjustable feed for boring or drilling machines.

ALDEN R. MORRILL.

HIRAM BALDWIN.

No. 7605.—*Method of Attaching Yards to Trusses.*

I claim suspending the yard to the truss, by means of linked and swivelled eye bolts, whereby the yard may either be allowed to hang freely below the eye, which is swivelled, to the truss, or may be slung upward and inward toward the mast, so as to bring its centre above the bowed end of the truss, in the manner and for the purposes herein set forth.

TILGATH ODEON.

No. 7606.—*Improvement in Electric Telegraph Manipulators.*

What I claim as my invention, and desire to secure by letters patent, is—  
First. The two guides *E, h*, with their hook and detent spring, as described, in combination with the moveable connecting points, and *D, D*, the type forms for letters, substantially in the manner and for the purpose set forth, the guides being disconnected as soon as the moveable connecting point has passed



them, thereby causing the finger key rods to resume their proper position to be again acted upon, and allowing the succeeding points to pass in their regular revolving course, without coming in contact with the type forms.

Secondly. I also claim the manner of disconnecting the two guides, viz: by the action of the moveable connecting point upon the detent spring, as above set forth.

Thirdly. I claim the employment of a clicking apparatus, to indicate the proper time of depressing the keys: the whole being constructed and arranged in the manner and for the purpose, substantially as herein set forth.

AUSTIN F. PARK.

No. 7607.—*Improved arrangement of Dampers in Cooking Stoves.*

What I claim therein as new, and which I desire to secure by letters patent, is the vertical dampers (*h*,) placed below the top of the oven in the division partitions (*g*,) substantially as herein before described.

HENRY L. SHEPERD.

No. 7608.—*Improvement in Blowers of Franklin Stoves.*

What I claim as new therein, and which I desire to secure by letters patent, is first, the inner doors or blowers (*f*,) made to slide in grooves within the front plates of the stove, serving when closed as a blower, and when not in use, being withdrawn out of the way and out of sight, substantially in the manner and for the purposes as above described.

DAVID STUART.

No. 7609.—*Improvements in Sub-marine Vessels.*

What I claim therein as my invention, and desire to secure by letters patent, is the method of effecting a circulation of the air, and of maintaining an atmosphere in the cabin of the requisite bulk, to prevent the encroachment of water during the descent of the vessel, and of preventing the waste of air by its expansion, and escape from the cabin during the ascent of the vessel, by pumping it either out of, or into the cabin, or air reservoir, as may be required, even when the density of the atmosphere in the compartment whence the air is drawn, is less than that of the atmosphere in the compartment into which it is forced, as herein set forth.

I also claim the device, consisting, substantially of the drop platforms, chains, and draw pin, for the purpose of carrying ballast on the exterior of a submarine vessel, and of discharging it at will, as herein set forth.

LAMBERT ALEXANDRE.

No. 7610.—*Improved method of Attaching lines to Harpoons.*

What I claim as new in my invention, and desire to secure by letters patent is the manner of attaching and securing the line to the harpoon, by means of the ring *H*, sliding on the shank, and the rounded end *d*, of the socket, or butt *C*, in the manner, substantially as herein described.

C. F. BROWN.

No. 7611.—*Improvement in Machines for dressing Staves.*

What I claim as my invention, and desire to secure by letters patent, in the before described machine, for shaving staves from rived bolts, is the employment of two concave knives for shaving the outer or convex surface of the



staves, substantially as herein described, in combination with a single knife for shaving the inner or concave surface of the staves, when the said single knife is placed in a line midway between the other two, that is, opposite the space between the other two, substantially in the manner and for the purpose specified.

LEWIS S. CHICHESTER.

No. 7612.—*Improvement in Pressing Cotton and other Substances into Bales.*

What I claim as my invention, and desire to secure by letters patent, is the method of packing and compressing substances into bales or packages, in a series of successive layers or strata, by means of rolling pressure or its equivalent, substantially as herein specified.

I also claim, combining with the laying and compressing rollers or cylinders, or their equivalents, a bed which shall be gradually separated from the rollers or cylinders, as the layers or strata accumulate, and which shall also traverse from end to end, under the rollers, or cylinders, or vice versa, substantially as specified.

I also claim, in combination with the cylinders for packing and pressing substances in successive layers, a lapping apparatus for forming such substance or substances into a lap or laps, to be delivered to the rollers or cylinders, or their equivalents, to be laid and pressed into the bed, substantially as described.

I also claim, in combination with the laying and compressing cylinders, or their equivalents, the series of rollers or their equivalents, for retaining the layers or strata, as they are successively compressed, substantially as specified.

I also claim the bed, made without sides or ends, substantially as, and for the purpose specified, in combination with the carriage, provided with adjusting plates at the ends, for the purpose and in the manner, substantially as described.

And finally. I claim in combination with the adjusting plates at the ends of the carriage, the stationary plates at the ends of the frame, under which the adjusting plates pass, to remove any substance that may have accumulated on them, substantially as described.

S. A. CLEMENS.

No. 7613.—*Improvements in Repeating Fire-arms.*

What I claim as my invention, and desire to secure by letters patent, is making the central bore of the many chambered rotating breech, which fits and turns on a central pin or arbor, to extend from the rear part thereof, to within some distance from the front end, and thus leave the front end closed, substantially as described, to prevent the access of smoke, when this is combined with the connecting of the barrel with the shield piece and lock plate, substantially as described.

SAM'L COLT.

No. 7614.—*Improvement in Hand Spinners.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the clamp lever V, with the cords and drum, for the purpose and substantially as described.

DAVID CURRENT.

No. 7615.—*Machine for Beveling the Surfaces of Washers, &c.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of drawing out, and giving a bevel



form to metal clinch rings, washers, &c. by the action thereon of the surfaces of a series of travelling rollers turning on bearings, arranged about a common centre of rotation, and combined with a spindle or mandrel, adapted to the reception of the clinch rings or washers, to be formed and provided with the means, as substantially herein described, for turning it to present in succession, every part of the periphery to the action of the rollers, substantially as described.

I also claim, in combination with the spindle or mandrel, for presenting the clinch rings or washers, to the action of the travelling rollers, a gripe, substantially as described, for griping and holding the said rings or washers on to the spindle or mandrel, whilst passing under the action of the travelling rollers as described.

WILLIAM FIELD.

No. 7616.—*Improvement in Draining Sugars.*

I claim of my invention, the mode of applying steam or liquids, to machines used for separating syrups or fluids from sugar, by means of centrifugal force, for the purpose of clearing and keeping clear, the meshes or apertures in the periphery of the revolving cylinders of such machines, in manner herein described.

CONRAD WM. FINZEL.

No. 7617.—*Improvement in Clamps for Holding Paper in Writing and Drawing.*

What I claim as my invention, and desire to secure by letters patent, is the clamping slides A, made to slide freely on the parallel rods B, operated by the lever C, and the springs D, substantially in the manner, and for the purpose as herein set forth.

ELIAKIM B. FORBUSH.

No. 7618.—*Improvement in Fastenings of Hay Rakes.*

What I claim, and desire to secure by letters patent, is:

First. The manner of holding the teeth *d*, firmly in their required positions against the sliding bar *i*, during the operation of the machine, by means of the aforesaid combination of the ratchet wheel *f*, pawl (*g*), sliding bar (*i*), and stem (*e*), helical spring *n*, fixed bar *m*, and slide *k*, attached thereto, with the parallel guiding arms *c*, and revolving finger shaft *a*, arranged and operating in the manner and for the purpose above set forth.

Second. I likewise claim, the combination of the slide *k*, helical spring *q*, strap (*o*), and roller *p*, with the parallel arms *c*, and fixed bar *m*, for disengaging the sliding stop bar *i*, from the rake teeth *d*, without moving the hand from its usual position on the hand roller *h*, to allow the teeth to revolve to deposit the hay in windrows, as herein fully set forth.

ORANGE W. HOGLE.

No. 7619.—*Improvement in Stoves.*

What we claim as our invention, and desire to secure by letters patent, is the jambs of stove or grate fronts or ends, constructed with recesses closed by doors, within which, the doors of the fire-place are folded up and concealed from view; the fire-place doors being constructed and arranged to turn back into the recesses, substantially as herein described.

SHERMAN S. JEWETT.

FRANCIS H. ROOT.



No. 7620.—*Improvement in Car Couplings.*

What I claim therein as my invention, and desire to secure by letters patent, is the bearing roller (or rollers) *m*, placed within the body of the coupling, and the bearing roller *n*, located in one end of the connecting link *c*, for the purpose of enabling the connecting bolt *A*, to be easily detached from the link *C*, when the cars are in motion; when this arrangement of the said rollers and connecting bolt, is combined with the loop *h*, the catch head *f*, and cord, for uncoupling, in such a manner, that the loop will be disengaged when force is applied to withdraw the bolt; but will prevent the connecting bolt from being accidentally thrown out of place, when the cars are in motion.

DAVID S. NEAL.

No. 7621.—*Improvement in Planing Machines.*

First. I claim the use and employment of the cutter *I*, made and fashioned in form and manner, or any analogous form and manner, whereby the peculiar cutting, bevelled scalloped edge is attained, for planing or dressing plank or other material, substantially as herein set forth.

Second. I also claim the use and employment of the cutter *I*, in combination with the compressing spring *J*, feed rollers and straight edge, or any one or more of them, in form and manner for the purposes, substantially as herein set forth.

J. F. OSTRANDER.

No. 7622.—*Improvements in Sewing Machines.*

What I claim, is the hook *z*, the surface *a*, the tube or holder *s*, and thread carrier *e*, working, substantially as above described.

BARTHELEMY THIMONNIER, SR.

No. 7623.—*Improvements in the Direct Action Steam Hammer.*

What I claim as my invention, and desire to secure by letters patent, is attaching the hammer to the sliding steam cylinder, substantially as herein described, the steam being admitted and discharged to and from the sliding steam cylinder, substantially as herein described.

J. H. TOWNE

No. 7624.—*Improvements in Manufacture of Lead Pipe.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of setting or cooling the inside of the mass of metal within and throughout the length of the cylinder, and before or preparatory to pressing out the pipe, by passing a cooling fluid into or through a long core or core holder, extending through the length of the cylinder, as herein described, the said method having the effect at the same time to keep the said core or core holder cool and stiff, as described.

WM. P. TATHAM.

No. 7625.—*Improvement in Apparatus for Breaking Horses.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of breaking horses by means of the shafts, which are connected together by a bow passing around in front of the horses' breast, substantially as herein described, in combination with the two straps, one passing over the crest and the other under the breast, by which the horse is harnessed to the said shafts, substantially as described.

SEYMOUR TOMLINSON.



No. 7626.—*Improvement in Surgeons' Splints.*

What I claim as my invention, and desire to secure by letters patent, is my improved surgeons' splints, composed of thin strata of wood, combined with some elastic adhesive substance interposed between them, substantially as herein set forth.

BENJAMIN WELCH.

No. 7627.—*Improvement in Ladies' Stays.*

What I claim as my invention, and desire to secure by letters patent, is the peculiar arrangement (in the body of the stay) of the whale bones *a, a, a, a, b, b*, in combination with the gores *g, g*, and *f, f*, of the particular form, and in the particular position represented, whereby the usual irritating effects of ladies' garments upon the muscles, &c. about the loins are avoided, at the same time that effectual support is given to the whole waist, by means of the peculiar position and shape of the gores, and thence the easy curves given to the whale bones, as set forth.

LOUISA BALIS.

No. 7628.—*Improved mode of representing Musical Scales.*

I claim the manner herein described, of representing each and all of the scales used in music, by the combination of the board *B*, the side bars *c, c*, the centre piece *D*, and the bars *d, d, d*, and *d', d', d'*, having letters attached to them to indicate the name of the notes or sounds they represent, or any other combination of parts, substantially the same.

W. B. BILLINGS.

No. 7629.—*Improvement in Revolving Chambered Fire Arms.*

What I claim as my invention, and desire to secure by letters patent, is an improvement for fire arms, having a rotating breech with a series of parallel chambers, in combination with the locking holes of rotating chambered breech fire arms, substantially such as herein specified, making grooves leading to each locking hole, substantially in the manner and for the purpose specified, when this is combined with a bolt, independent of the mechanism which rotates the breech, and which bolt enters the lock by a spring, and is withdrawn by its connection with the lock, substantially as described.

And I also claim holding the rotating breech midway, or nearly so, between any two of the chambers, to prevent accidental discharges, by means of a recess or hole in the hammer or cock, fitting on to a projection of the rotating breech between any two of the chambers, or vice versa, substantially as herein specified.

SAM'L COLT.

No. 7630.—*Improvement in Paint Mills.*

What I claim as my invention, and desire to secure by letters patent, is the broad depressions *b, b*, in the face of the muller *a*, when combined with the discharging grooves *c, c*, in the same, and with the plane surface of the bed *a'*, substantially in the manner and for the purpose as herein set forth.

W. W. DRAPER.

No. 7631.—*Improvement in picking Cotton from the Bolls in the Field.*

What we claim as our invention, and desire to secure by letters patent, is First. The combination of the whipping cylinder *M*, with the picking disks *A, A*, and the strippers *B, B*, and also the combination of the whipping cylinder *M*, with the picking cylinders *C, C*, and the strippers *D, D*, substantially in the manner and for the purpose as herein set forth.



Second. We claim the combination of the picking disks A, A, and the strippers B, B, with the gathering planes L, L, and the cotton receptacle J, substantially in the manner and for the purpose as herein set forth.

Third. We claim the combination of the picking cylinders C, C, and the strippers D, D, with the gathering planes L, L, and the cotton receptacles K, K, substantially in the manner and for the purpose herein set forth.

SAM'L S. REMBERT.

JEDEDIAH PRESCOTT.

No. 7632.—*Improvement in Smiths' Strikers.*

What I claim as my invention, and desire to secure by letters patent, is attaching the raising and rebound springs, and the hammer, to the same adjustable frame, substantially as herein described, when this is combined with the adjustable attachment, between the hammer and the treadle, whereby the hammer can readily be adjusted to strike a flat blow on iron of different thicknesses.

MELCHI SCOTT.

No. 7633.—*Improvement in Camp Bedsteads.*

What we claim as new and of our own invention, and desire to secure by letters patent, is—First. So arranging the parts of a camp chest, that when it is unfolded in a direction parallel with its length, it will constitute a bedstead, which may be of the width of the inside of the chest, and when unfolded in a direction at right angles with its length, it will constitute a bedstead, which may be of the width of the inside of the length of the chest.

And Second. The arrangement by which a part of the front of the chest (B,) fig. 2, can be used as a table leaf, and the slides C, as seats at the table, substantially in the manner and for the purpose set forth.

WM. C. SHAW.

JAS. STALCUP.

No. 7634.—*Improved Exhaust Passages for Steam Cylinders.*

What I claim herein as new, and for which I desire to secure letters patent, is the two-fold outlet or steam passage from the cylinder into the exhaust valve chamber, which admits the steam above and below, and discharges it between the disks of the exhaust balance valve, and thus facilitates the insertion, withdrawal and adaptation to the exhaust side in the line of its stem or spindle of a balance valve, whose disks are cast in one piece, and are held down to their seats by the stress of steam.

GEORGE SHIELD.

No. 7635.—*Improvement in Mortising Machines.*

What I claim as new in the herein described mortising machine, and desire to secure by letters patent, is in combination with a device for giving the chisel a reciprocating motion, the device for giving it at the same time an oscillating motion, substantially as herein set forth.

SMITH SPENCER.

No. 7636.—*Improvement in Machines for Scribing Lumber.*

I claim the manner of operating the horizontal sliding carriage E, E, carrying the cutter blocks F, F, and cutters or scribes *f*, *f*, and the vertical sliding carriage I, I, carrying the cutter blocks F2, F2, and cutters or scribes *f*2, *f*2, in such a manner that they perform the duties in concert, without



interfering with each other, by means of the levers G, G, the rods *h, h*, the levers *a, a*, the straps *e, e*, the levers *i j, i j*, and weights *k, k*, in combination with the pulleys C, C, the straps J, J, the rods *l, l*, the levers K, K2, and the weights L, L1, the levers G, G, and the pulleys C, C, being hung upon the same shaft B, and operated by the same treadle D, substantially in the manner and for the purposes herein described.

JOHN SHELLENBERGER.

No. 7637.—*Improvement in Clover Hullers.*

What I claim as new and of my own invention, is the continuous wave form of the rubbers of the concave: and I further claim the continuous wave form of the rubbers, if it should be applied to the cylinder, instead of the concave.

ROBERT STADDEN.

No. 7638.—*Improvement in Plough Clevises.*

What I claim as new, and desire to secure by letters patent, is forming a plough clevis by means of two arcs of metal, of corresponding outward curvatures, having the point of attachment of the draught link to the martingale, for their common centre of curvature, in the manner and for the purposes herein set forth.

Second. I also claim, in combination with a fixed horizontal arc, having a slot between bearing edges, the vertical arc having notches on its inner curve, adapted to the bearing edges of the fixed arc, whereby the direction of draught may be varied horizontally or vertically, as required.

JOHN B. STONER.

No. 7639.—*Improvement in Friction Rollers.*

What I claim therein as my invention, and desire to secure by letters patent, is the friction rollers, each composed of a series of separate sections, held together by nuts, or otherwise, on a common spindle, in such manner that the spindle and roller sections usually turn together, but when any obstruction intervenes to stop the movement of any one section, and thus cause it to grind and flatten the adjacent sections with the spindle, continue to roll on, and by rubbing against the obstructed one, tend to move it past the obstruction, thereby preventing continued excessive wear on any one portion of its periphery: hence the irregular wear of any one of the sections will not affect the general roundness of the whole to such a degree as will materially impair the efficiency of this device as an anti-friction roller.

JOSEPH M. TOTTEN.

No. 7640.—*Improvement in Plough Cleaners.*

What I claim as my invention, and desire to have secured to me by letters patent, is the combination of the vibrating finger clearer, with the beam and sheath of the plough, said finger clearer being arranged in such a manner in relation to the sheath or throat of the plough, that by the use of the hand of the ploughman, to elevate and depress a lever, a series of curved or straight fingers will be made to vibrate back and forth, adjacent to the sheath, and clear away straw, stubble, and other obstructions therefrom, as described and set forth.

DAVID WARREN.



No. 7641.—*Improvement in Tailors' Measures.*

What I claim as my invention, and desire to secure by letters patent, is the use of the slides for laying off the division of the several measures for a coat, in combination with the fashion slides, for the purpose and in the manner herein set forth.

WILLIAM W. ALLEN.

No. 7642.—*Improvement in the Seeding Roller of a Seed Planter.*

What I claim as my invention, and desire to secure by letters patent, is the constructing a seeding wheel for a planting machine, by the combination of two parts *a* and *d*, of the form herein described, in such a manner that by turning one of the said parts within or upon the other, in one direction, the planting receptacles will be reduced in depth and size, and by turning the said part of the seeding wheel in an opposite direction, the planting receptacles will be enlarged in depth and size, substantially as herein set forth.

AARON PALMER.

No. 7643.—*Improvement in the Process of Working Gutta Percha.*

What we claim as our invention, and desire to secure by letters patent, under the first part of our invention, consists in the use of lime or other alkaline substance, with heat in the manner substantially as herein described, in the cleaning of gutta percha, to neutralize the acid or acids contained in that substance in its crude or native state, and thus preserve and render more permanent its useful properties, as specified.

And in the second part of our invention, we claim compounding lime with gutta percha, substantially as herein described, for the purpose of improving its qualities, preserving it wholly or partly from deterioration, and protecting it against the injurious effects of the atmosphere and heat, substantially as described.

S. T. ARMSTRONG.

CHAS. J. GILBERT.

No. 7404.—*Improvement in the Process of Preparing Cream.*

What I claim as my invention, and desire to secure by letters patent, is the process described herein of distilling milk, and condensing the same in sugar for the purpose of preserving the flavor, as set forth.

CHARLES DENNISON BIRDSEYE.

No. 7645.—*Improvement in Spike Machines.*

I claim the heading and carrying nippers *l*, *m*, in combination with the shears, the headed and the gripping mechanism, the same being made to operate in connection therewith, substantially as above specified.

And in combination with the lower nipper, I claim the spring catches, latching and unlatching apparatus, applied to it for the purpose above specified.

WM. BLAKE.

No. 7646.—*Improvement in Machinery for Ginning or Picking Cotton.*

What I claim, is the combination of such parts as I have shown, forming a picking machine, and their mode of action, as hereinbefore described.

FRS. A. CALVERT.

No. 7647.—*Improvement in Processes for Preparing Wheat for Grinding.*

I claim the application of an acidulous composition to wheat or other grain,



the said composition being principally vinegar; but I do not limit my claim to the exact composition of acids as herein described, while the same effects can be produced by the vinegar alone, or when combined with one or more of the other acids, especially with the sulphuric acid, for the purposes set forth.

JOSEPH W. CARPENTER.

No. 7648.—*Improvement in Paper Filers.*

What I claim therein as new, and desire to secure by letters patent, of the United States, are:—First. The arrangement and construction after the manner, substantially as described, of a box or receptacle for documents and papers, having a lid fitting loosely within it, which is made to press down upon the papers by a spiral or other suitable spring.

Second. The rod (c,) or its equivalent attached to the lid, and moving in the guide slits or apertures (d,) in the sides of the box, the said slits terminating in a notch or shoulder (g,) at their upper extremities, for the reception and retention of the rod during the manipulation and examination of the file.

W. A. COLLORD.

No. 7649.—*Improvement in Grain Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is the application to a reaping and mowing machine, of two sickles working together in opposite directions, as set forth in the above specification and accompanying drawings, so as to throw the weight of the moving parts upon opposite sides of the centre of the crank or bit, for the purposes set forth.

EBENEZER DANFORD.

No. 7650.—*Improvement in India Rubber Hose.*

What we claim as our invention, and desire to secure by letters patent, is the making of flexible hose or pipe, by combining India rubber leather with a tube of rubber, substantially as herein described, the whole being united, forming one solid tube, making a strong, durable, and flexible hose, adapted as a substitute for leather, and other similar pipes for the conveying of fluids.

HORACE H. DAY.

RICHARD McMULLEN.

No. 7651.—*Improvement in the Plough Clevis.*

What I claim as new, and desire to secure by letters patent, is so making a clevis with teeth or prominences, and cavities on the front surface of a socket, matching with corresponding depressions or cavities, and elevations on the surface of a moveable bar, that the bar and socket when set together by a screw or other equivalent fastening in the required position, may have numerous bearings, and be wholly prevented from either sliding or revolving in any direction, without breaking the continuity of materials of which the parts are composed.

I also claim, in combination with a series of radial ridges, or a circle of cavities on the end of a clevis socket fixed at the extremity of the plough beam, a series of teeth, or of conical points on a moveable clevis bar, so adjusted to each other, that the guide hole of the clevis bar, may be held in any required position, and at any necessary distance from the axis of the beam, without relying on friction of the surfaces to prevent slipping, in the manner and for the purpose herein set forth.

GERRETT ERKSON.



No. 7652.—*Improvement in Printing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the mode of representing letters, and the sounds of letters, by means of characters made by changes wrought upon a less number of moveable type, than the number of letters or sounds of letters represented. The type being made upon, or attached to the bottom of wires or rods, which are worked by keys at or near the top, substantially as herein set forth.

JOHN B. FAIRBANK.

No. 7653.—*Improvement in Corn Shellers.*

What I claim as my invention, and desire to secure by letters patent, is the device herein described, for twisting and forcing the ears of corn, between spring shelling plates, substantially as herein set forth.

SAM'L L. GRAVES.

No. 7654.—*Improved Tool for Forming Plaster Cornices and Mouldings.*

What I claim as my invention, and desire to secure by letters patent, is arranging a former, for making mouldings upon the walls and ceilings of a room, upon the diagonal of a square frame, and making an angle of forty-five degrees with each side of said square, for the purpose and in the manner described.

SYLVESTER GROESBEECK.

No. 7655.—*Improvement in Daguerreotype Plate Holder.*

What I claim as my invention, and desire to secure by letters patent, is the daguerreotype plate holder, constructed substantially as herein described, of a block with a spring edge, by which the plate is secured to it.

GEORGE MALLORY.

No. 7656.—*Improvement in Spring Beams to Ploughs.*

What I claim as my invention, and desire to secure by letters patent, is the adjustable spring bar, interposed between the point of draft and the frame of the plough, in the manner and for the purpose herein set forth.

WILLIAM MORRISON

No. 7657.—*Improved Roadway for Rail Cars and ordinary Vehicles.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of making rails for the roadways of streets, &c., by combining with the rails on which flanged car wheels run, outer faces of sufficient breadth for the wheels of common carriages to run, made curved or inclined from the top of the rail, substantially as described.

And in combination therewith, I also claim, making wide faces on the inside of the rails, substantially as described, for the wheels of common carriages to run on, as described.

JORDON L. MOTT.

No. 7658.—*Improvement in Cast Iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is a cast iron wheel in one piece, having the rim connected to the hub by two plates joined together at intervals, at points as small as may be, and nearly equidistant from the rim and hub, said plates being of such form, that each section by the plane of the axes, passing through the points of union,



shall present two pointed arches, uniting at the apex, the one springing from the ends of the solid hub, and the other from the edges of the rim; and a similar section between the points of union, shall bestow flat curved lines bending towards each other, and joining the ends of the solid hub with the edges of the rim; and a circular section passing through the points of union of the two plates, shall produce a double series of flat arches united to each other at their ends. The whole being constructed, substantially in the manner and for the objects herein set forth.

BENJAMIN SEVERSON.

No. 7659.—*Improvement in Sewing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the machinery herein described; for making the stitch, viz: the combinations of the hook *v*, the plyer *w*, and needle *l*, as constructed and made to operate together, substantially as described.

JOHN BATCHELDER.

No. 7660.—*Improvement in Looms for Weaving Tapestry and Brussels Carpets.*

What I claim therefore, as my invention, and desire to secure by letters patent, is closing and opening the supports or guides, as they are raised, and depressed, to receive and support or guide the wires, and to liberate them in manner, substantially as herein described.

And I also claim, the employment of a stop motion in looms, for weaving looped or piled fabrics, in which the pile is formed on wires, for the purpose of stopping the loom whenever a wire fails to be introduced, substantially in the manner described.

E. B. BIGELOW.

No. 7661.—*Improvement in Processes for Refining Gold.*

What I claim as my invention, and desire to secure by letters patent, is—  
First. The process of dissolving alloyed gold, for refining it by developing nitric acid, or both nitric and muriatic acids gradually, from their salts, in the manner and for the purpose set forth in the specification.

Second. I claim the process of precipitating gold from its solution, and removing therefrom the insoluble chlorides, as set forth.

Third. I claim the process of refining alloyed gold, without the use of silver, so as to form a solution of gold and other metals, and a residue of chloride of silver and of other insoluble chlorides, and then precipitating metallic gold upon those insoluble chlorides in the same vessel without transfer, after the solution is effected; and afterwards dissolving out the insoluble chlorides from the gold, or reducing the insoluble chlorides to the metallic state in the wet way, and dissolving out the metals from the gold, all in the manner hereinbefore described. But I do not claim dispensing with the use of silver, except as a part of the main process herein described.

Fourth. I claim the process as described, of dissolving alloyed gold in wooden vessels, which may be of any dimensions, corresponding to the extent of the operation.

Fifth. I claim the process as described, of dissolving alloyed gold, by blowing steam directly into the solvent liquids, all in the manner as herein before described.

JAS. C. BOOTH.



No. 7662.—*Improvement in Grain cleaning Machines.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the revolving slotted hollow barrel (B,) with the toothed wheels (F, F',) the same being arranged and operated, substantially in the manner and for the purpose herein set forth.

GEO. W. BOWERS.

No. 7663.—*Improvement in Machines for Fumigating Plants.*

I claim the combination in apparatus or instruments, for fumigating purposes, of a destroying magazine containing the fumigating or obnoxious substance, with a cylinder and exhausting fan or wheel, whereby the smoke is drawn in at one part of the cylinder, and driven out at another, and whereby, also the atmospheric air, necessary for the combustion of the substance, is drawn into it by the said fan or wheel, both as before described.

D. S. BROWN.

No. 7664.—*Improvement in Machines for making Ropes.*

What therefore I claim as my improvement, is to support the frame E, of the gears and strand spindles, on the main laying shaft alone, and combining with the said frame E, and the main frame of the machine, the lever U, or suitable machinery, whereby the said frame E, of the gears and strand spindles may be either clamped to the main frame, or so fastened, as to be prevented from revolving, while the main laying shaft and strand spindles are in revolution on their respective axes, or be unclamped, or unfastened therefrom, as occasion may require, and for the purpose of enabling the strands to be laid or twisted together, without previous removal from their spindles, as heretofore practised, and above described.

HENRY EVANS.

No. 7665.—*Improvement in Stop motion of Looms.*

What I claim as new, and desire to secure by letters patent, is the manner herein described, of securing the moveable reed bar and reed, while the filling is being put in, and releasing them after the filling is completed, by the combination of the levers G, G, having arms *d*, *f*, and snecks *e*, *e*, and the springs *h*, *h*, and H, the whole being arranged and operated in the manner, substantially as herein set forth.

ELIJAH HALL.

No. 7666.—*Improvement in the construction of Thrashing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the thrashing cylinders, constructed of fast and loose sections, the fast sections of one cylinder being opposite the loose sections of another, substantially as herein set forth.

D. W. HARRIS.

No. 7667.—*Improvement in Burning Fluids.*

What I claim as my invention, and desire to secure by letters patent, is the compounding rosin and the essential oil of vegetables or grain, (when the same is produced by distillation of whiskey<sup>or</sup> alcoholic liquors, and thereby become a refuse article,) for the purpose of making a material from which to make gas; also for a burning fluid, as set forth herein, whether compounded in the precise proportionate quantities set forth or other quantities, which will produce, substantially the same result, all of which is fully set forth herein.

EPHRAIM HOWE.



No. 7668.—*Improvement in Machinery for drawing Hemp and parting its Fibres.*

What I claim as my invention, and desire to secure by letters patent, is the employment of two sets of holding and drawing rollers, substantially as herein specified, in combination with a rotating cam, (or cams,) or the equivalent thereof, for each sliver, in the manner and for the purpose, substantially as described.

O. S. LEAVITT.

No. 7669.—*Improvement in Casting Stereotype Plates.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the dipper, constructed substantially as described, in the vertical casting of stereotype plates, in the manner herein set forth.

JASON M. MAHAN.

No. 7670.—*Process of reducing Gold Bullion.*

What I particularly claim as my invention and discovery, and desire to secure by letters patent, as a new and useful improvement in the art of refining gold bullion, is—

First. The reduction of argentiferous and other gold bullion, as a preparatory process in the art of refining thereof, into a pulverulent or spongy state, or a disintegrated molecular condition, by the means particularly of fusion therewith, and the subsequent removal by acids therefrom, of zinc or other metal, baser than silver, which will produce the desired effect, for the purpose of then separating by acids from such gold bullion, the silver and other impurities which it may contain, without quartation with silver, or any intermediate process, in order to fit the gold for coinage and other uses.

Secondly. I also claim, in addition to the above processes, the pulverizing by grinding, crushing, or percussion, of gold bullion, rendered brittle by union with lead, solder, or other like base metal, for the purpose set forth in the specification.

RICHARD S. McCULLOH.

No. 7671.—*Improvement in removing Electricity from Wool in the process of Manufacture.*

I claim as my improvement, in the manufacture of wool, the removal of electricity from its fibres, substantially in the manner and for the purpose herein set forth, but irrespective of the form, arrangement, or construction of the apparatus by which such removal of electricity is effected.

JOSEPH METCALF.

No. 7672.—*Improvement in Heating Elevated Ovens.*

What I claim as new, and desire to secure by letters patent, is the arrangement and combination of revertible flues in elevated ovens of cook stoves, in the manner and for the purpose herein described and represented.

P. A. PALMER.

No. 7673.—*Improvements in Machinery for Fulling Cloth.*

What we claim as our invention, and desire to have secured to the said Charles A. Read by letters patent, is the above described mode of fulling fabrics by means of toothed cylinders, by power machinery, the fabric being fed between the fulling toothed cylinders by means of feeding rollers, through guides



with sufficient rapidity to prevent all strain upon the fabric, and at the same time to supply the fulling cylinders which receive the fabric, full it, and then pass it out between two cleaning rollers, which receive it from the fulling cylinders, prepared for other processes. The movements of the several parts of the machine being produced by a combination and adjustment of mechanism, similar to that herein described and represented, or any other which may be substantially the same, and by which analogous results may be produced.

CHARLES A. READ.  
THOMAS COTTER.

No. 7674.—*Improvement in Water Wheels.*

What I claim therefore as my invention, and desire to secure by letters patent, is making the discharge aperture of the shutes moveable, relatively to the axis of the wheel, or the axis of the wheel moveable, relatively to the aperture of the shute, substantially as described, for the purpose of varying the effective diameter of the wheel, and thereby increasing or decreasing the velocity thereof, substantially as described.

TIMOTHY ROSE.

No. 7675.—*Improved Machine for Forming and Charging Percussion Caps.*

What I claim as new therein, and which I desire to secure by letters patent, is—

First. The combination of the several motions given to the sheet of metal, by which it is presented to the cutting punch by an intermittent motion from right to left, and vice versa, and when the edges are reached, reversing the direction, and at the same time advancing the sheet so that the blanks are punched in successive rows across the sheet, substantially as set forth.

Second. I claim the chisel (3,) moving with the punch stock (c,) by which the perforated sheet is cut into strips, for removing it piecemeal from the machine, substantially as described.

Third. I claim giving such a form to the slots of the carrying plate that the cups when lifted from the shaping die, are caught by them and taken on, substantially as described.

Fourth. I claim in combination with the slots of the carrying plate, the conducting groove, by which the caps are guided transversely in the slots, and made to present themselves accurately under the charger and polisher, and to drop out when completed, through the holes (16,) at the end of the slots, substantially as described.

Fifth. I claim operating the cap holder (33,) and the revolving polisher or pressing punch (31,) by a single cam in connection with the strong and weak springs (36 and 37,) substantially in the manner and for the purposes set forth.

Lastly. I claim the combination in one automatic machine of the several processes, by which the percussion caps are cut out of a sheet, shaped, charged, and the charge polished down, substantially in the manner described.

GEORGE WRIGHT.

No. 7676.—*Improvement in Wrought Iron Car Wheels.*

What I claim, is the combination of a rim E, with arms D, at the ends of the spokes C, by means of the inner flange F, and bevel E', between the flange and opposite side of the rim.

HERRICK AIKEN.



No. 7677.—*Improvement in Cotton Stalk Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of two saw-teeth wheels, with the frame, and supported thereby, and the triangular pieces of iron for disengaging the stalks, in the manner herein set forth.

STEPHEN BOWERMAN.

No. 7678 — *Improved Double Acting Rocker for washing Gold.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the moveable pan with the gold washing rocker, so arranged and operated, as to give to the pan inside of the rocker, a double rocking or vibrating motion, sidewise and endwise, substantially as described in this specification.

ARNOLD BUFFUM.

PHILIP THORP.

No. 7679.—*Improvement in Mills for Grinding.*

What I claim as my invention, and desire to secure by letters patent, is the elastic cushion, inserted in the bottom of the socket of the cock head, substantially in the manner and for the purpose herein set forth.

W. P. COLEMAN.

No. 7680.—*Improvement in Slides for Seed Planters.*

What I claim as new therein, and which I desire to secure by letters patent, is the combination of the reversing slides (*k* and *l*,) with each other, and the hopper, by which the machine can be readily adapted to different varieties of planting, in the manner and for the purposes set forth.

ROBERT J. COLVIN.

No. 7681.—*Improvement in Vegetable Cutters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the double edged reciprocating blade, with the hopper and removable bars, for slicing vegetables, substantially as herein set forth.

REUBEN DANIELS.

No. 7682.—*Improvements in Looms.*

I claim the combination of the stationary circular plate *d*, the gears *f*, *g*, *h*, and *i*, the circular box *a*, with the tubular shaft *H*, and the main shaft, the same being for the purpose of effecting the rotations of the cam shaft *H*, without any such exposure of gears as is customary in most other looms, and which are not only often productive of accidents to attendants or workmen, but often destroy or injure the shuttles when thrown out of the lay, by the action of the pickers.

I also claim the combination of mechanism, for operating the harnesses, when they are constructed substantially as specified, the said combination consisting of the supporting or radial bars *r*, *s*, *y*, *z*, of the harness frames *M*, *N*, the rocker shaft *q*, and tubular shaft *t*, the arm *v*, and its pin or stud, which enters the groove of the cam *w*, and the endless chain *a*<sup>3</sup>, and fixed pulleys *a'*, *b'*, the whole being applied together and made to operate, essentially as above described.

I also claim the mode of constructing each of the harness frames, viz: of a combination of a bar and thread carriers as applied together, and made to operate, in the manner as above described.



I also claim the combination of an endless belt  $c'$ , or  $d'$ , and its projection or picker  $f'$ , with each shuttle box and its picker staff, so as to constitute the floor or bottom of the shuttle box, and operate, and be operated in manner as described. This mode of constructing the shuttle box, in consequence of the belt moving with the shuttle, reduces the friction of the shuttle in its passage out of the box.

I also claim the combination of mechanism, for operating each picker staff, the same consisting of the cord and pulley attached to it, and the main frame, the spring of the foot of the picker staff, the spring latch on the lay, and the discharging cam or plane affixed to one of the harness frames, the whole being as above described.

I also claim the above described mode of making the race beam, viz: with elevations of plates  $x'$ ,  $x'$ ,  $x'$ , to extend above it, and between and above the lower warp threads, and so as to constitute a support for the shuttle, in its passage over the race beam, the same enabling me to protect the yarns from injury from the shuttle, and to run the loom at a greater velocity than it would be safe to operate it with a race beam, constructed in the ordinary manner.

HALVOR HALVORSON.

No. 7683.—*Improvement in Rice Harvesters.*

What I claim as my invention, and for which I desire to secure letters patent, is the application of the vertical blade F, and wing attached to either, or both sides of a beam A, and their combination with each other, and the other parts of this machine running by hand or horse power.

J. J. HERNDON.

No. 7684.—*Improvement in Saw Gates.*

What I claim as my invention, and desire to secure by letters patent, is raising and lowering the saw, for the purpose of using the whole cutting part of the same.

OLIVER B. JUDD.

No. 7685.—*Improvement in Dash Boards for Carriages.*

I claim the arrangement of the winch shaped hand and foot lever ( $h$ ,  $h$ ), in combination with, and the attaching the same to a jointed moving dash frame  $n$ ,  $n$ ,  $n$ ,  $n$ , together also with the attaching of said jointed moving dash frame to the running gear part of the vehicle, instead of to the body part of the vehicle, as is usual.

LEWIS LUPTON.

No. 7686.—*Use of Rosin Oil in Printers' Ink.*

What I claim as my invention, and desire to secure by letters patent, is the employment of rosin oil in the manufacture of printing ink, substantially as herein set forth.

MOSES M. MATHEWS.

No. 7687.—*Improvements in Weavers' Shuttles.*

What we claim, and wish to secure by letters patent, is—

First. The combination and arrangement of friction levers in weavers' shuttles, in such a manner that the lever shall be allowed to vibrate towards, and from the bobbin, for the purpose of producing a more even tension, substantially as herein described.

Second. The combination and arrangement of a spring and cam surface, upon the friction lever, in order that as the friction lever is raised from its seat, the compression may be made more or less as desired, substantially as herein described.

JOSEPH MILNES.

WILLIAM MERKLAND.



No. 7688.—*Improved Auger Handle.*

What I claim herein as new, and of my invention, and desire to secure by letters patent, is securing augers and other tools, in their handles, by means of a tube attached to the inner half of one part, and an eccentric attached to the inner half of the other part of the handle, the eccentric part passing into the tube, and the eccentric fitting into the dovetailed grooved slot of the shank, substantially as herein described.

GELSTON SANDFORD.

No. 7689.—*Improvement in Spring Callipers.*

What I claim as my improvement, and wish to secure by letters patent, is the circular spring enclosed within the hollow head, resting on the pivot on which the two parts turn, and acting on the two parts (or shanks,) throwing them outward against the nut on the cross bar.

WM. M. SMITH.

No. 7690.—*Improvement in Grain Driers.*

What I claim as new in my invention, and desire to secure by letters patent, is the revolving barrel, consisting of the wheels H, H, and the bars I, I, provided with arms *h, h*, carrying scrapers *i, i*, in combination with the troughs D, D, arranged one above another, in the manner substantially as herein set forth, for the purpose of drying meal, grain, &c.

CHAS. S. SNEAD.

No. 7691.—*Improvement in Construction of Endless Aprons in Thrashing Machines and Grain Cleaners.*

What I claim as my invention, and desire to secure by letters patent, is the method of constructing the closed metallic apron C, for separating grain, in the manner described.

ASHLEY TOWNSEND.

No. 7692.—*Improved Door Spring.*

What I claim as my invention, and desire to secure by letters patent, is the door spring, consisting essentially of a spring, jointed lever, strap, and curved track, the latter being of the form herein described, to control the action of the spring, and the several parts, together with the door and the door frame, being arranged with respect to each other, substantially as herein described.

AMOS WESCOTT.

No. 7693.—*Improvement in Straw Cutters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the moving cleansing bar (*j*,) with the stationary blade (C,) substantially in the manner and for the purposes herein set forth.

I also claim the treadles (E, E,) constructed and arranged substantially as herein set forth, in combination with the cutter gate.

ISAAC WOODWARD.

No. 7694.—*Improvements in Shanks of Hay Forks.*

What I claim as my invention, and desire to secure by letters patent, is the constructing the hay, straw and manure forks with two or more tines, in a separate manner, and confined in a socket, as set forth in the above specification and drawings, or otherwise, substantially the same, in a way and man-



ner so that either of the tines can be taken out of the socket, and another put in its place, if necessary.

DAVID ANTHONY, Sen.

No. 7695.—*Compound for Imparting a Gloss to Clothes.*

What I claim as my invention, and desire to secure by letters patent, is the within described compound of stearic acid, white wax, spermaceti, and quick lime, prepared as fully set forth.

WM. D. BEAUMONT.

No. 7696.—*Improvement in Presses for Copying Letters.*

What I claim therein as new, and desire to secure by letters patent, is the manner in which I have arranged and combined the two plates, or platens A and B, with the two levers E, E, and with the steel spring C, C, as set forth, the two plates being made to approach each other by the drawing apart of the levers E, E; the two bolts D, D, that are operated on by said levers, passing through the outer ends of the spring C, which is curved, and operates on the curved bottom of the plate B'', in the manner and for the purpose set forth.

GEO. BURNHAM.

No. 7697.—*Improvement in Hay Forks.*

What I claim as new in my invention, and desire to secure by letters patent, is the manner, substantially as herein described, of forming the tines c, c, and fitting them in the stock or handle, so that they can be secured in the stock or handle, either by the wedge shank d, of the centre tine D, or by a detached wedge d, of similar form, and the pin b, so as to make either a two tined or a three tined fork.

ALINZOR CLARK.

No. 7698.—*Improvement in Seed Planters.*

What I claim, and desire to secure by letters patent, is—First. The sliding link (x,) in combination with the lever (R,) the catch (S,) for working the seeding apparatus by the draught of the team, as set forth.

Second. I claim stopping the feeding, by slackening the bands, and the simultaneous elevation of the shovels, by the draught of the team, substantially as set forth.

DAVID EBERLY.

No. 7699.—*Improved Seeding Apparatus for a Seed Planter.*

What I claim as my invention, and desire to secure by letters patent, is the ratchet shaped vertically revolving feeding wheels, arranged and operated in the manner and for the purposes herein set forth.

G. S. GARDNER.

No. 7700.—*Improvement in Mounting the Cutters of a Mowing Machine.*

What I claim therein as new, and desire to secure by letters patent, is the method of constructing a revolving grass or grain cutter, so as to adapt itself to the varying surface of the ground, by means of hanging it by a universal joint on the end of a shaft, adjustable vertically, substantially as herein described.

GEORGE HART.



No. 7701.—*Improvement in Machinery for Doubling and Twisting Yarn.*

What I claim therein as new, and desire to secure by letters patent, is the stop wires, so constructed and connected with the head of the spindle, and with the strands of the yarn, that whenever any of the latter are broken or run out, the stop wires shall move and effect the disconnection of the machinery from the moving power, thereby stopping it, substantially as herein set forth.

MOSES HEY.

No. 7702.—*Improved Kettle for Manufacturing Comfits.*

What I claim as my invention, and desire to secure by letters patent, is the improvement in manufacture of comfits, by apparatus constructed upon the principle herein set forth, and consisting essentially of a pan moved by machinery, as herein described.

WM. H. HOLT.

No. 7703.—*Improvement in Gasometers.*

I claim the introduction of the secondary shaft, connecting by means of a wheel and pinion, with the drum shaft in the interior of the metre case.

Secondly. The arrangement, substantially as shown, by which the gas is passed at once into the interior of the drum, and removing the pressure from the chamber in which is the valve float, or by whatever means this effect is produced.

T. W. LANE.

No. 7704.—*Improved Eaves Trough and Gutter Machine.*

What I claim as my invention, and which I desire to secure by letters patent, is the grooved moveable rib (*d*), locking down to the mandrel, for the purpose of holding the beaded edges of the sheets while bending and soldering; and rising, to allow of inserting and removing the work, substantially as described.

I also claim, in combination with the revolving mandrel, the piece (*c*), suspended on the journals of the mandrel, and resting when required, on the ledge (*a'*), substantially in the manner and for the purposes described.

JOHN LEE.

No. 7705.—*Grain and Maize Harvester.*

What I claim as my invention, and desire to secure by letters patent, is the use of the revolving shaft *D*, in combination with a system of fingers, teeth, or knives, arranged on the shaft, as described, and for the purpose herein set forth, not confining myself to any particular size, shape, or curvature.

EDMUND QUINCY.

No. 7706.—*Improved Vulcanized India Rubber Spring.*

What I claim as my invention, and desire to secure by letters patent, is the employment of a ring or rings, or disks, made of any of the preparations of caoutchouc, known under the various appellations of metallic or vulcanized rubber, as a substitute for metal or other kinds of springs, heretofore known and used, when such ring or rings, or disk or disks, or the equivalents thereof, are applied, in manner substantially as herein described, in combination with a series of solid disks or plates, or their equivalents, substantially as herein described, whether made of metal or other solid or non-elastic substances.



I also claim making the surfaces of all or either of the plates above and below, and interposed between the elastic rings, or their equivalents, or the surfaces of the elastic rings, or either of them convex, substantially in the manner and for the purpose specified.

F. M. RAY.

No. 7707.—*Improvement in Sofa Bedsteads.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the frames D, D, which are of the same form as the sofa ends F, F, with the said sofa ends, substantially in the manner and for the purpose as herein set forth, to wit: when the back A, is elevated to convert the sofa bed into a sofa, the frames D, D, must be swung inwards against the sofa back, to retain it in an elevated position, and to throw the said frames out of the way and out of sight; and when it is desired to change the sofa bed from a sofa to a bed, the said frames D, D, can only be swung outwards, into a line with the sofa ends F, F, so that the ledges *l, l*, on the inner sides of the same will unerringly catch and retain the back A, when it reaches a horizontal position, as it is thrown rearwards, in which position the sofa ends F, F, and the swinging frames D, D, will form an ornamental and uniform head and foot to the bed form of my improved sofa bed.

RUSSELL SCARRITT.

No. 7708.—*Improved Grummet Strap.*

What I claim as new in this invention, is the mode of applying the above described strap, by encircling the rope therewith, and stitching or pegging the strap to the canvass, and so applying it as to insert the grummet through the strap and canvass, and this is what I desire to secure by letters patent.

ELI F. SOUTHWARD.

No. 7709.—*Improved Spring Grapple.*

What we claim, therefore, is not a set joint, but the arrangement of the tongs shaped spring talons and set joint, constructed and acting as herein described.

ORRA WARNER.

CHARLES S. GAYLORD.

No. 7710.—*Improvement in Cast Iron Car Wheels.*

What I claim therein as my invention, and for which I desire to secure letters patent, is the combination of the arch at the centre with the curved plate, and arms or brackets, connecting the hub and rim, in the manner and purpose set forth.

NATHAN WASHBURN.

No. 7711.—*Improvement in the Adjustment of Knives in Straw Cutters.*

What I claim as my invention, and desire to secure by letters patent, is the mode of attaching the knives to the permanent arms, by means of the pendulous or moveable arms rotating on the shaft, and secured to the permanent arms, by means of screw bolts passing through elongated holes in the moveable arms, thereby allowing the cutting edge of the knives to be placed at any required angle necessary for adjusting them to the bed cutter or shear, in combination with the moveable box, for regulating the mash of the cog of the pinion into those of the wheel, substantially as described.

JOSEPH W. WEBB.



No. 7712.—*Improvement in Portable Bedsteads and Sacking Bottoms.*

What I claim as my invention, and desire to secure by letters patent, in the making of a sacking bed of canvass, or other cloth, to be suspended from the edges, is the insertion of gores to fit the same to the swell of the body at the shoulders and hips, substantially as described.

And I also claim, making the frame of a portable bedstead, substantially as herein described, of a series of posts connected and combined together longitudinally and laterally by braces on the principle of the lazy tongs, the said braces being connected with the posts by means of joints and slides, substantially as herein described.

SAMUEL WHITEMARSH.

No. 7713.—*Improvement in Warm Air Registers.*

What I claim as my invention, and desire to secure by letters patent, is the manner in which I have combined the screw, racks, and segments of pinions, and the application of this combination to the purpose herein described, viz: that of opening and closing the valves of warm air registers.

PETER G. WOODSIDE.

No. 7714.—*Improvement in Looms for Weaving Figured Goods.*

What I claim to have invented, and desire to secure by letters patent, is as follows:

First. The arrangement of machinery for throwing the shuttles as herein described, in connection with the arrangement of the machinery for raising and lowering the shuttle boxes; the devices thus arranged, occupying the under part of the loom frame and being more simple, compact, and convenient than other arrangements heretofore in use, for the same purpose.

Second. The winding of the cloth round the beam with uniform tension by increasing the leverage of the weight  $M^3$ , in proportion as the diameter of the roll of cloth is increased, substantially as herein described.

Third. In combination with a positive let-off, I claim the use of a conditional let-off, constructed substantially as herein described, whereby, when there is an excess of strain on the warp threads an increased quantity of yarn is delivered from the yarn-beam; such conditional increased delivery of the yarn ceasing whenever the proper strain on the warp thread is restored.

Fourth. The preventing the opening and closing of the shed from producing an increased or diminished strain upon the warp threads, by means of the regular and positive advance of the let-off rolls toward the harness through an invariably equal distance at every opening of the shed, and by their return through the same distance at every closing of the shed, substantially as described.

Fifth. The causing the loom to throw itself out of gear, whenever a shuttle fails to go into its proper box at the proper time, and whenever the connection formed by any weft thread between its shuttle, and the cloth is not maintained during the whole of the passage of that shuttle through the warp thread, by the operation of the hooks combined with each other, and attached to the bed of the lay, substantially as described, the hooks being in the latter case combined with wires or prongs for the reception of the weft thread, substantially as described, and operated by the passage of the shuttle into the shuttle box, substantially as described.

Sixth. Forming and breaking in any required order, the connection between



the draught boards respectively and the machinery that works them, by means substantially such as are herein described; this method of working the draught boards admitting of a more simple, compact, and convenient arrangement of the machinery than others before used to attain the same end.

Seventh. The combination of a rising and falling jacquard frame, with the draught boards, substantially as herein set forth; whereby the depression of the frame will be simultaneous with the elevation of a part of the draught boards, and the elevation of the frame with the depression of a part; the one in this manner aiding in working and equipoising the other.

Eighth. Elevating and depressing the harness and draught board, by the simultaneous elevation or depression of all the knot boards for the purpose of opening the sheds in looms for weaving figured fabrics when these knot boards are arranged above the draught boards, as herein described.

Ninth. In connection with the movement of the part of the jacquard, to which the harness is attached, substantially as described, I claim the arrangement of the harness and of the movement parts of the jacquard, and of their connections with the lower part of the loom, substantially as described, in such manner, that at the time when the loom is to be thrown out of gear, the weight of the harness and of those parts and connections, shall oppose the greatest possible resistance to the momentum of the loom.

Tenth. I claim the use as a part of the jacquard machine, of the combination of the machinery herein before described, as shown in fig. 4, of the accompanying drawings, such combination consisting of the two slides  $Y^{10}$ , the two springs  $Z^{10}$ , and the two needles  $Q^{10}$ , constructed substantially as described, and operating so as to permit the draught board to come down without crowding out the cylinder or prism, substantially as described.

AVERY BABBETT.

No. 7715.—*Improvement in Braces for Carriage Tops.*

What I claim as my invention, and wish to secure by letters patent, is the construction and arrangement of braces for carriage tops, so that when one limb or part of the brace is turned upon a prop, fulcrum or pivot, all the joints of such brace are simultaneously moved or operated, substantially as shown in the drawings. I also claim the adaptation of a graduating strap, loop or similar device, so as to secure the top at any desired elevation, as herein set forth.

JNO. L. ALLEN.

No. 7716.—*Improvement in Filtering Cocks.*

What I claim as my invention or improvement, is the combination of parts arranged, constructed, and made to operate together, substantially in the manner herein before set forth, the said combination consisting of the box or case A, the tubular passage way B, having three discharging orifices G, H, I, the turning or hollow plug C, made with a discharging orifice E, the central and two lateral chambers K,  $i$ ,  $k$ , the passages connecting the openings G, H, with the chamber  $k$ ,  $i$ , the self-operating valves, and their stem, and seats and valve openings; the passages leading out of the bottom of the two lateral chambers, the central discharge pipe leading out of the chamber K, the partitions  $s$ ,  $t$ , and the filtering medium, having wire gauze chambers, as above specified, or being used without them, as occasion may require.

DANIEL BARTLETT, JR.



No. 7717.—*Improvement in Looms.*

What I claim as my invention, is the combination of the vibrating posts and springs applied to them, as arranged and adapted to the loom frame, and the operative parts with which they are connected, substantially in the manner and for the purpose of easing the web, without varying its horizontal position, as herein before specified.

A. H. BOYD.

No. 7718.—*Improvement in Machines for Pulverizing Sugar.*

I claim as my invention, the combination of a rotative series of cells, a rotative series of stampers, suitable machinery for actuating the stampers, and a cylindrical mortar, when arranged and made to operate together, and to receive, pulverize, and expel sugar or other material, substantially in the manner as herein before specified.

O. R. CHASE.

No. 7719.—*Improvement in Hemp Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is First. The box on the right marked Q, which is a constant oil retainer.

Second. The combined sides X, X, and spring bottom R, R, for catching and laying the hemp, &c.

Third. I claim casting (or securing in any firm manner,) choppers on a rock shaft N, with the edges chisel shaped, and set so as to strike obliquely against the top and right edges of the teeth P, where the part N, moves by a lateral and semi-rotary motion in procuring this combined motion. I employ a male and female screw thread, as already fully described in the preceding part of these papers. I do not desire to be understood as confining myself to the screw in getting this motion in N, but will employ any other method most suitable to produce the desired result, and which shall be substantially the same.

WILLIAM BAILY COATES.

No. 7720.—*Improvement in Grain Cradles.*

What we claim as our invention, and desire to secure by letters patent, is the particular construction and arrangement of the brace rods c, so as to fold down upon the fingers, as shown in fig. 2, each being bent in the proportionate angle, fitting their respective localities, the ends thus bent pass through the fingers perpendicularly at d, and are secured by rivetting the same upon the upper side of the fingers, which shape and form given to the wire braces, forms and constructs a hinge joint, and each may be turned or swayed in the direction desired, and when separated from the sneath, each wire brace is placed in the position as represented by fig. 2 aforesaid, permitting large numbers to be packed in a condensed form, in packages or boxes convenient and proper for removal, storage, or transportation, substantially the same as herein before set forth and described.

ISAAC T. GRANT.

DAN'L H. VIAL.

No. 7721.—*Improvement in Pegging Jacks.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the two jaw blocks and the double spring connecting rod, as constructed and made to operate together, and in connection with the other parts of the apparatus, substantially as herein above specified.

JACOB JENKINS.



No. 7722.—*Improvement in Machines for Folding Paper.*

My improvement or combination, as invented and claimed by me, consists of the following elements :—First. A slotted plate B, table or contrivance for receiving and supporting the sheet.

Second. Two parallel planes or plates (L, M,) extending at right angles from such support, and so arranged that there shall be one of the said plates on each side of the slot *b*, of the first element or support of the sheet.

Third. A striking and folding frame or plate (D,) so arranged and operated as to press the paper against the middle or other proper part of it, force it downwards through the slot, and between the two parallel plates: the said parallel plates operating to complete the fold, and to hold the sheet of paper during the return or retrograde movement of the striking frame or plate: and in combination therewith, I claim a second striking and folding plate N, arranged at right angles to the said two parallel plates, and made so to pass or operate through them or their slots, and directly after the said retrograde movement of the first one, as to press against the sheet of paper, and force it through one of the said slots, and thereby once more, or a second time fold it.

And I claim, in combination with such second combination of mechanism, a third striking and folding plate (R,) and slotted parallel folding plate S, and friction rollers (*p*, *q*,) or equivalent contrivances, the same being for supporting the thrice folded sheet of paper, folding it a third time, and subsequently discharging it, such discharge taking place in consequence of the return or retrograde movement of the striking or doubling plate, as above described.

And I also claim the combination of mechanism which is applied to the striking plate, and its rollers or folding contrivances, and used for packing the sheets; the said mechanism consisting of the stationary plate T, and the spring plate U, or plate and its springs, or other proper equivalents, which permit the recession of the plate in proportion as the pack of sheets increases in size; the whole being arranged and made to operate together, substantially in the manner as herein before specified.

GEORGE K. SNOW.

No. 7723.—*Improved Machine for Excavating and Conveying Earth.*

What I claim, and for which I wish to obtain letters patent, is the combination of the series of elevators, with the scoop, and a rising and falling earth bed, furnished with an apparatus for emptying the same, the whole arranged and acting substantially as herein described.

I also claim a regulator to the scoop, attached in the manner and for the purposes herein specified.

JOHN A. SPRAGUE.

No. 7724.—*Improvement in Molasses Gates.*

What I claim, is the arrangement of the spring, the turning shaft, and their bearings at one end of the gate, and on the side of the screw or seat tube, substantially in the manner above specified, the same giving to my improved molasses faucet, several important advantages over that described in the said patent numbered 3002.

ERASTUS STEBBINS.

No. 7725.—*Maize Harvester.*

I wish it to be understood, that I do not limit myself merely to the various parts herein described, when combined together in a single machine, as some



of these parts may be used without the others ; neither do I limit myself to the precise combination of parts described in this specification, as portions of one machine may be used in connection with portions of the others, thus constituting new machines, operating upon a common principle ; but what I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of separating the ears of Indian corn from the standing stalks on which they grow.

I also claim, in combination with the gathering forks, apparatus for husking and shelling the corn, substantially as herein set forth, whereby the gathering, husking and shelling of corn, are performed at a single operation.

WILLIAM WATSON.

No. 7726.—*Improvement in Suspender Buckles.*

What I claim as my invention, and desire to secure by letters patent, is the connecting of the wire forming the tongue of the buckle, to the outside plate, by means of an eye or hinge formed by bending a portion of the plate, thus making the whole buckle of but two pieces of metal, also bending or forming the wire which forms the tongue of the buckle, in such a manner as to make a lateral spring for securing itself in its proper place, and also the method of securing the points of the tongue by the lateral hooks or guards, curved from the sides of the plate in such a manner as to receive and partially or entirely cover the points of the tongue, and the whole of these contrivances arranged, connected, and combined, substantially as herein described.

CHARLES BENEDICT.

No. 7727.—*Improvement in Feeding Apparatus for Straw Cutters.*

What I claim, therefore, is the use and employment of the adjustable and compressing lid C, in combination with the feed roller and a cutting-box, having an adjustable block piece to contract the mouth of it, and so arranged as to present the straw or stalk obliquely at different angles to the action of the knife, and compress it while under its edge, substantially in form and manner as herein set forth.

HENRY H. BERTHOLF.

No. 7728.—*Improvement in Cheese Presses.*

What I claim therein as new, and desire to secure by letters patent, is the elastic strap for raising the platen rod, arranged and operating substantially as herein set forth.

J. CARD.

No. 7729.—*Improvements in Machines for Making and Holding Cores for Casting.*

What I claim as new, and desire to secure by letters patent, is the combination of the two moving jaws O, O, with the stationary piece A, said moving jaws being shaped and actuated, substantially in the manner and the mechanical devices herein specified.

I also claim keeping the cores straight and stiff in the flasks, without the use of anchors, by means of contrivances substantially such as are herein described.

LUTHER H. CROCKER.

No. 7730.—*Apparatus for Reversing or Stopping Locomotive Engines.*

What I claim as my invention, and desire to secure by letters patent, is the



arrangement and connection of the system of devices, consisting substantially of a rock shaft (M,) with its hand lever (O,) and arms (H,) link rods (c, q,) helical segment (G,) drum (F,) sliding key (D,) and oscillating arms (k,) together with the eccentrics and valves, with their respective rods, by means of which the movement of the steam valves of a locomotive engine can be arrested or reversed, with proper lead, to reverse the motion of the locomotive by a single movement of the hand.

JAMES CUNNINGHAM.

No. 7731.—*Improvement in Cotton Presses.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the press herein described, so arranged that it may be conveniently charged in an upper story of the building in which it is placed, and actuated and uncharged in a lower story of the same, substantially as herein set forth.

J. T. ELLIOTT.

No. 7732.—*Improvement in Subsoil Ploughs.*

What I claim as my invention, and desire to secure by letters patent, is the scoop instrument A, A, with the combination of the cutters in the rear, as a subsoil plough.

WM. C. PAGETT.

No. 7733.—*Improvement in Apparatus for Releasing Horses from Carriages.*

What I claim as my invention and improvement, is combining two tapered trace bars F, F, with the flexible lever or disengaging strap I<sup>2</sup>, attached to the upper end of the curved confining box plate J, projecting outward from the swingle tree A, in which the flexible lever I<sup>2</sup>, and ends of the tapered trace bars F, F, fit, and are properly secured with the traces, by the curve of the box plate J, and a guard or holder L, attached to the flexible lever I<sup>2</sup>, and fitting into the cavity of the box plate J, directly over the ends of the trace bars F, the disengagement being effected by drawing a cord K, attached to the flexible lever I<sup>2</sup>, which will cause it to approximate to a straight line, and with it elevate the ends of the trace bars F, and liberate the same from the curved box plate J, as fully set forth.

TAPLEY B. PYRON.

No. 7734.—*Improved Wrought Iron Railroad Chair.*

What I claim as my invention, and desire to secure by letters patent, is a wrought iron railroad chair, with lips formed from that portion of the plate on which the rail is usually supported, substantially as herein set forth.

EDWARD S. RENWICK.

No. 7735.—*Improvement in Preparing Beefsteak for Cooking.*

What I claim as my invention, and desire to secure by letters patent, is preparing beef and other steaks for cooking, by running them through toothed rollers, substantially as set forth and described in the specification and drawings.

THOMAS G. STAGG.

No. 7736.—*Improvement in Fastenings of Coulters to Ploughs.*

What we claim as our invention, and desire to secure by letters patent, is the construction of the double plates, held in parallel position by the combined action of the coulters and the bolts K, K, substantially as described, and for purposes as above set forth.

AUSTIN WHITTLESY.

AUSTIN K. WHITTLESY.



No. 7737.—*Improvement in Processes for Manufacturing Alum.*

What I claim as my invention, and desire to secure by letters patent, is the obtaining of alum by the action of sulphuric acid, or its equivalent, upon the substance called green sand marl, or simply marl.

JACOB HENRY WURTZ.

No. 7738.—*Improvement in Printing.*

First. I claim marking on the shank and foot of types, by any convenient means, such as writing, engraving, casting, or electrotyping, the same letter or character, which is formed on its upper surface, and also the method herein shown and described, of casting the intaglio letters on the shank and foot of the types at the same time that the type itself is cast.

Second. Making types, having the combination with the usual letters in relief on the face of the type, intaglio letters on the foot thereof, for the purpose of serving as matrices, from which to obtain a polytype plate, while the types themselves will serve for printing.

Third. I claim casting spaces on the sides of the ordinary type for the purposes above mentioned, as above described.

Fourth. I claim the peculiar mode herein shown and described, of polycomposing, either from the ordinary cases, or from what I call the authoriton.

Fifth. I claim the process and apparatus herein shown and described, for facilitating the sorting and distributing of types and spaces, and making part of them of wood and iron, so that the wooden portion may be separated by means of water, the iron ones by a permanent or temporary magnet, and the others into their several receptacles by hand, the workman being considerably assisted in this operation by the type being marked on their sides.

Sixth. I claim the apparatus shown in figs. 8, 9, and 10, which I denominate the authoriton, and also of the use of copying sticks, shown in figs. 13, 14, and 15, for the purpose of facilitating composition, by which the above described types are brought into a convenient space for composing from, as herein before described.

BARTHOLOMEW BENIOWSKI.

No. 7739.—*Improvement in Electro Magnetic Enunciators for Signals in Hotels, &c.*

What I claim as my invention, and desire to secure by letters patent, in my improved electro magnetic enunciator for hotels, &c., is the manner in which the signal bell and any one of the signal plates can be simultaneously acted upon, at a distance from the enunciator, through the medium of the galvanic battery O, the series of electro-magnets A, and g, g, and the wires k, l, n, n, connected with each other, with the insulated point and the shank of the knob P, located within the walls of the different rooms, and with the bell S, and signal plates B, B, of the insulator, substantially in the manner herein set forth.

CHAS. S. BULKLEY.

No. 7740.—*Improvement in Winnowing Machines.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the additional bottom board M, with the elevated fan O', and fan case O, for the purpose of diminishing the space between the discharging board E, and screens, for concentrating the blast beneath, and in contact with the screens, for the purpose described.

J. G. GOSHON.



No. 7741.—*Improvement in Car Couplings.*

What therefore, I claim as my invention, is the improvement whereby the cars are connected or disengaged, under the above named circumstances, or in other words, I claim the combination of the suspended extension pin I, with its weighted pin or arm *h*, or any mechanical equivalent therefor, the hinge H, and the buffer socket to which they are applied, the same being constructed and made to operate, substantially as set forth.

NATHAN HASKINS.

No. 7742.—*Improvement in Corrugated Boilers.*

What I claim therein as new, and which I desire to secure by letters patent, is the employment of corrugated plates of metal, for forming the curved arches of fire chambers, and shells of steam boilers, the corrugations running in the direction of the curves, substantially as described.

RICHARD MONTGOMERY.

No. 7743.—*Improvement in Bedstead Fastenings.*

What I claim as my invention, and desire to secure by letters patent, is the construction and application of a triangular or forked plate of iron, made in such a manner, as that it can be secured to its place and draw the post and rail firmly together, by means of an eccentric or cam, substantially as above described.

JOHN MORRISON.

No. 7744.—*Improvement in Rotary Grain Screens.*

I claim the construction of a rolling screen consisting of a large and fine, and small, and coarse part, in combination with conductors D, to carry the grain from the large to the small part, for the above mentioned purpose, and substantially as above described

DAN. PEASE, JR.

No. 7745.—*Improvement in Machinery for Pressing Hats.*

I do not claim merely so arranging the smoothing irons that they can all by a single movement be simultaneously brought over the block, I only claim this, when the irons are also at the same time and by the same movement brought into the requisite contact with the top and sides of the crown, and with the brim of the hat, to smooth and compress the same, substantially as herein specified.

I likewise claim the devices herein described, or their equivalent, for rendering the crown iron self-adjusting, with respect to the brim iron, so that the pressure of the crown iron, will be co-etaneous with that of the brim irons, without affecting the relative degree of pressure with which they respectively bear upon the surfaces, to be smoothed by them, substantially as herein set forth.

BENNETT POTTER, JR.

No. 7746.—*Improvements in Machines for making Wrought Iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is the forging of solid wrought iron wheels, when made by drop and die, the use of a lower die or anvil, made to revolve during the process of forging, horizontally on a central vertical axis, either by hand, or by the machinery, which operates to drop the ram or hammer, substantially as set forth in the above specification.

NATHAN STARKS.



No. 7747.—*Improvement in Reed Musical Instruments.*

What I claim as my invention, is the improvement of the vibration string, or strings, wire or wires *e, e, e, e*, in their combination with the wind chest, the same being made to be vibrated by the air, in its passage into or through the wind chest, substantially as specified.

I also claim the above described extension or elongation of the passage *l*, in combination with the improved arrangement of the reed and valve opening, the said arrangement, consisting in placing the reed not directly over the valve opening, but at a distance therefrom, and in said passage, substantially as specified.

JAMES P. SLEEPER.

No. 7748.—*Improvements in Machines for Nicking the Heads of Wood Screws.*

What I claim as my invention, and desire to secure by letters patent, is interposing a spring between the gripping jaw, and the lever or cam by which it is operated, in the manner substantially as herein described, and for the purpose specified.

I also claim making the spring, which is interposed between the gripping jaw and the mechanism which operates it, so that its tension can be varied and regulated, in the manner and for the purpose specified.

And I also claim, causing the gripping jaw to open slightly, after it has seized the blank, to permit the blank to assume its proper position, between the jaws, before it is finally gripped, in the manner, substantially as herein specified.

THOS. J. SLOAN.

No. 7749.—*Improvement in Spike Machines.*

What I claim therein as new, and which I desire to secure by letters patent, is—

First. The adjustable cutter (5,) when in such position, with regard to the dies for holding the spike, that the rod forming the spike is both cut off, and the proper bend given to it, to form the head at one and the same operation, during which, the spike is held stationary, substantially in the manner described.

Second. I claim the jaw (3,) of the swage, kept open by a spring, in combination with the moving swage (2,) and the stationary swage (6,) the swage (2,) having an inclined face, which acting on a similar face on the back of the jaw (3,) closes it for forming the point for the spike, whether placed in front of the revolver, to point the rod, or behind it to point the spike, constructed substantially as described.

H. N. SWIFT.

No. 7750.—*Improvement in Machines for Dressing Irregular Forms.*

What I claim as new, and desire to secure by letters patent, is the toothed wheel *i*, upon the shaft *S*, arranged so that it is capable of being thrown in gear with either of the racks *d, d*, in combination with the dog *S*, on the slide *D*, and the notched projection on the table *B*, by which the slide is locked to, or unlocked from the table, for the purpose of enabling the wheel *i*, to give either a rectilinear motion to the said slide *D*, or a circular motion to the table *B*, as may be required, in the manner and for the purposes, substantially as herein set forth.

ALANSON CARY.

No. 7751.—*Improvement in Rotary Pumps.*

What I claim as new, and desire to secure by letters patent, is the two pistons, acting alternately with each other as rotary pistons, and as stationary



partitions, in connection with the arms and apparatus, by which they are worked, substantially as above set forth.

WILLIAM H. DAVIS.

No. 7752.—*Improvement in Furnaces for Steam Boilers.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as described, of the making the box lining of furnaces, with a partition or division plate or plates, between the inner lining and outer shell, to direct the current or currents of air before entering the fire, substantially for the purpose and in the manner specified.

I also claim the manner of arranging the furnace door with its interior plate or lining, in combination with the tube or apertures for blowing or forcing in air, steam, or other cooling medium, between the door and said plate, all as herein described, irrespective of form, and also of the manner of producing the forced current of the cooling medium.

F. P. DIMPFL.

No. 7753.—*Improvement in Washing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of three vertical presses or washers, in combination with the fan, arranged and operated in the manner, and for the purpose above set forth.

R. A. FISHER.

No. 7754. [Sam'l W. Hawes,—cancelled.]

No. 7755.—*Improved Valves for Governors.*

What we claim as our invention, and desire to secure by letters patent, is making the valve openings of governor valves, to widen from the closed towards the fully open end, and also in such a manner, that when the governor acts upon the valve under low speed, it shall cause the opening or closing of that part of the steam passage, where the rate of widening or narrowing of the passage, is more rapid than at the parts at which the valve acts at high speeds.

Second. We also claim forming valve openings, substantially as described, in fig. 4, whatever may be the number of openings in to which the space or valve seat is divided, and whether the said openings are made in plane or curved surfaces.

Third. We also claim the spring set screw, re-acting against the pressure of steam in the valve, not only for relieving the valve from friction, but also for causing it to recede slightly from its seat when the valve approaches its open position, whereby an increased flow of steam is permitted, and the rate of flow augmented the more the valve opens, or the tension of steam diminishes, as herein set forth.

Fourth. We also claim, in combination with a valve lever, adjustable to the stem of the valve, an indicator not adjustable, for the purpose of setting the valve in any required position without opening the valve box.

JUNIUS JUDSON.

ALFRED JUDSON.

No. 7756.—*Improvement in Straw Cutter.*

What I claim as new in my invention, and desire to secure by letters patent, is the application and use of rotary spiral cutters D, D, which are self-



feeding, in combination with a stationary knife, or cutting edge, in the manner and for the purpose, substantially as described.

A. S. MACOMBER.

No. 7757.—*Improvement in Lime Kilns.*

What I claim therein as new, and desire to secure by letters patent, is :

First. The construction of an upper tier, or tiers of arches, in the manner and for the purpose herein fully set forth.

Second. I claim the recesses or openings F, F, in combination with an upper tier or tiers of arches, for the purpose of creating a draught through the structure, after the lower arches have become stopped up.

WILLIAM McCOY.

No. 7758.—*Improvement in the Running Gear of Carriages.*

What I claim, is the axles of the wheels having racks on their inner ends, meshing into central cog wheels, the front one of which meshes into a segmental rack on the inner end of the pole of the carriage, the whole being constructed, arranged, and operating in the manner, substantially as described.

JOSEPH PINE.

No. 7759.—*Improvements in Operating the Copping Rail of Cop-Spinners.*

What I claim as new in my invention, and desire to secure by letters patent, is changing the direction in which the ring rail is moved, and the speed at which it is operated, for the purpose of governing the winding of the thread on the cop, and forming a bind thread, by means of the combination of the shaft M, having a toothed wheel N, and smaller wheel O, fast upon its axis, with the shaft R, having on it a fast toothed wheel S, and a loose smaller wheel or pinion V, operated by shifting belts and pulleys, or other similar changing or reversing gear.

WANTON ROUSE.

No. 7760.—*Improvement in Hardening Fats and Oils.*

What I claim as my invention, and desire to secure by letters patent, is the hardening of fatty or oily substances, without separating the stearine from the oleine to such a degree, that they can withstand a heat of at least 135 degrees Fah. without melting ; using for that purpose, the ingredients of cera japonica and gum elemi, in the manner and proportions above described, which will produce the intended effect.

CARL WILHELM SCHINDLER.

No. 7761.—*Improvement in Clamps for Girding Emery Wheels.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the screws F, and G, and toggle joints C, C, with the jaws B, B, substantially as herein described and set forth, for the purpose of producing, first tension of the girding substance, and then the compound motion of the jaws in closing together, and settling down to the object on which the machine rests.

HENRY S. VROOMAN.

No. 7762.—*Improved mode of Fastening Hooks and Eyes upon Cards.*

What I claim as my invention, is the putting on of the hooks and eyes, in such a manner upon paper perforated as herein described, that the points of



the hooks are upon one side of the sheet, and the eyes upon the other side, thereby securing the eyes against dropping off from the hooks. I claim nothing in regard to the manner of perforating or folding the paper, nor for any other method of putting hooks and eyes upon perforated paper, than the method herein described.

E. J. WARNER.

No. 7763.—*Improvement in Fly Brushes.*

What I claim as new, is so constructing and adapting the revolving fan or brush, that it may be placed like a lamp upon a table, or may be fixed to the walls or ceiling of a room, or that it may be suspended by a cord over a bed, sofa, or cradle, by the means herein fully described.

SAMUEL R. WILMOT.

No. 7764.—*Improvements in Apparatus for Stretching and Smoothing Cloth.*

What I claim as my invention, is the combination of the revolving platform, or table W, and the guide roller or apparatus X, with the series of stretching rollers; the whole being substantially in the manner and for the purpose as herein before specified.

JOHN BUTCHER.

No. 7765.—*Improvement in Portable Furnaces.*

What I claim as my invention, and desire to have secured to me by letters patent, is a summer furnace in which the draft is derived to the fire chamber from the exterior of the furnace and at the bottom of the same, and passes first up through a flue chamber, (formed between the partition *i, i*, and the periphery of the furnace as above set forth,) and then down through the fuel, all as herein above set forth, and for the purpose specified.

JOHN P. HAYES.

No. 7766.—*Improvement in Processes for Curing Meat.*

What I claim as my invention, and desire to secure by letters patent, is the method of curing meat, by placing it with brine within a vessel, and then subjecting it to the combined action of agitation, and an alternate increase and diminution of atmospheric pressure, substantially as herein set forth.

GEORGE STARKWEATHER.

No. 7767.—*Improved Filter for Oils.*

What I claim as my invention, and desire to secure by letters patent, is the use of a filter formed as described, carried downwards by pressure, under the force of which the oleic acid is filtered upwards, and which, applied in connection with the arrangement described for applying cold, allows oils and fats to be purified in warm weather.

THOMAS ANTISELL.

No. 7768.—*Machine for making Jack Chains.*

What we claim as our invention, and desire to have secured to us by letters patent, is the combination of the parts, movements, and operations, in one machine, which are required to make jack chains by one process, from the straight wire, after it is cut off in suitable lengths, to finished chain, substantially as described.



We also claim, particularly, the stud pin with a recess in it, substantially as herein described—that is, the use of it as a mandrel, around which the bow of a link is bent, while the bow of another link is held in the recess, thereby forming a continuous chain, and irrespective of the mechanical devices by which it is moved or used.

We also further claim, the partly revolving mandrel with its stud and nipper, and other appendages, for bending the last bow of each link, substantially as combined and used in our machine, and constituting part of it.

CHARLES ATWOOD.

GEORGE KELLOGG.

No. 7769.—*Improvement in Repeaters for Electro Magnetic Telegraphs.*

What I claim therein as my invention, and desire to secure by letters patent, is the manner of connecting two galvanic circuits with the two electro-magnets (*a, a,* and *d, d,*) in the said repeater, substantially as herein represented and described, to wit: each of the said galvanic circuits, as it passes through my said telegraphic repeater, embracing in its course the armature of the opposite electro-magnet, in the said instrument, previous to its passing through the helices in the electro-magnet, embraced in its own respective circuit.

In combination with the above, I also claim the connecting the points *b, j,* with the galvanic battery *O,* (or batteries,) when the said points are placed in such positions, in relation to the armatures (*s, t,*) of the electro-magnets in my said telegraphic repeater, that when either one of the said electro-magnets is charged, it will, by attracting its armature against one of the points *b,* or *j,* close the poles of the galvanic circuit in which the opposite electro-magnet, (in the instrument,) is in connection, and thereby throw the battery *O,* into the said circuit, substantially as herein set forth.

CHARLES S. BULKLEY.

No. 7770.—*Improvement in Seed Planters.*

What I claim as my invention, and desire to secure by letters patent, is the attachment of my vertical cylinders *J, J,* to the rear of my ploughs or cultivator, (without regard to any particular plough,) in combination with its machinery, arranged substantially in the manner and for the purposes herein set forth.

SAMUEL CANNON.

No. 7771.—*Improvement in Printing Machines.*

What I claim as new, and desire to secure by letters patent, is—

First. I claim the type form, constructed substantially as described and represented, viz: with the types arranged in rows, longitudinally and laterally, in such manner as to permit each type to be brought to a given position, at the will of the operator, to be pushed upon the paper by the plunger *C,* No. 1, or its equivalent.

Second. I claim the combination of the two motions, which I have called lateral, and longitudinal, for the purpose of bringing the type or character required in position to make its impression.

Third. I claim the wedge shape movement, in combination with a type form, substantially as described and represented, for the purpose of giving motion to the latter.

Fourth. I claim the manner of adjusting with precision the required position of the type form, by the use of gauges, substantially as described and rep-



resented, in combination with the two motions already described, as giving motion to the type form, or in any combinations, substantially the same.

Fifth. I claim the inking of the types by the inker, interposed during the action of the machine between the face of the types and the paper.

Sixth. I claim the use of the bob (V,) substantially as described and represented, to furnish the power to cause the pressure on the types, or the inking of the same.

Seventh. I claim the combination of the bob, whose fall produces the pressure on the types, with a contrivance by which, after the blow is given, a second blow or vibration, is prevented.

Eighth. I claim the use of the slats, substantially as described and represented, or other analogous device, controlling the motions of the machine, combined with the rods answering to the letters or characters wanted, by means of the catches on which the slats may be moved separately or together, in any combinations of time, or extent of motion that may be required for the action necessary to produce the given characters.

Ninth. I claim the draft rod and lever, (see *r, i*, and *q, i*, No. 3,) in combination with the slat *p, i*, or its equivalent, to produce the various movements required to control the types.

OLIVER T. EDDY.

No. 7772.—*Improvement in Horse Shoe Machinery.*

What I claim, and want secured to me by letters patent, is the combination of the two flanged rotating dies, arranged with respect to each other, and operating substantially as herein described, said dies being so shaped as to give the requisite form to the metallic shoes of animals.

SAMUEL S. GREENE.

No. 7773.—*Improvement in Drying Paints.*

What I claim as my invention, is a method of giving a drying quality to oils, by the use of a mineral, commonly known by the name of the red oxyde of zinc, in a partially deoxydised state, and either in combination with those substances naturally associated with it, or by the use of any of its component parts, separated by mechanical means.

AQUILLA JONES.

No. 7774.—*Improvements in Iron Railings.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the rods, tubes, and palings, with the manner of operating the same, as herein set forth and described.

JOHN KRAUSER.

SOMMERS CROWELL.

CYRUS KRAUSER.

No. 7775.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the method of heating the front end of the extended part of the oven, in combination with and receiving the heated air from the hot air chamber, behind the fire back, and causing it to pass through the oven, and out into the fire flues, in the manner substantially as described, and for the double purpose of heating the front end of the oven, and passing a current of heated air through the oven, substantially as specified.

SAMUEL PIERCE.



No. 7776.—*Improvements in Sewing Machines.*

What I claim as my invention, and desire to secure by letters patent, is forming a stitch by each throw of the shuttle and corresponding motion of the needle; that is to say, making one stitch at each forward, and another at each backward motion of the shuttle, this being effected by the needle, in combination with the shuttle, both constructed, arranged, and operating as herein described, or in any other mode substantially the same.

Second. I claim the combination of the sliding bar Q, the plate r, the feeding plate V, the spring W, the screw t, the lever R, and the clamping plate T, for holding and feeding the cloth to the needle and regulating the length of the stitch, in the manner herein described, or in any way substantially the same.

ALLEN B. WILSON.

No. 7777.—*Hinged Gun Harpoons.*

What I claim as new in my invention, and desire to secure by letters patent, is making the shank of harpoons, and other whale irons, to fold by a hinge or joint at any convenient point in their length, in the manner and for the purposes, substantially as herein described.

WILLIAM ALBERTSON.

No. 7778.—*Improvement in Bake Ovens.*

What I claim therein as new and of my invention, and desire to secure by letters patent, is the combination and arrangement of an endless chain platform N, with the oven, by which arrangement, the unbaked bread or other articles being put in at one end, are discharged at the opposite end completely baked; and in combination therewith, I claim the self-opening and closing door F', arranged substantially as herein set forth.

HOSEA BALL.

No. 7779.—*Improvement in Working the Doors of a Bee-Hive.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the bee boxes and moth chambers, in combination with the sliding screen doors, pulleys and levers, as described, so that the doors may be worked by a single movement of the lever, in the manner and for the purpose set forth.

JARVIS CASE.

No. 7780.—*Improvement in Air-Heating Furnaces.*

What I claim therein as new, and desire to secure by letters patent, is:

First. The annular chamber, constructed and arranged, substantially in the manner and for the purposes set forth, with or without the cross pipe.

I also claim the mode of conducting off the products of combustion from the fire through ascending pipes h, into an annular chamber, and thence into a central descending pipe to their exit, and the surfaces being all so constructed of a curved figure, as to allow a diverging influence, and free circulation to the exterior air in the air chamber, to be warmed without over-heating it; while it is, by the arrangement of parts, forced to impinge directly against the heated surfaces.

I also claim the method of setting the furnace, consisting of a double walled chamber, the inner wall of which encloses a cold air trench, supplied from without that surrounds the ash pit, with openings at its top for the proper admission of air into the air chamber around the furnace, and with lateral open-



ings into the space between the walls, to cause an upward current, which is connected with the warm air-pipes leading to the apartments, by means of which a constant and pure supply of air is insured, and the heat greatly economized.

GARDINER CHILSON.

No. 7781.—*Improvement in Corn Shellers.*

What I claim as new and my improvement, and desire to secure by letters patent, is the combination of the wheels C, D, E, for shelling corn, as herein described.

DAVID ELDRIDGE.

No. 7782.—*Improvement in Mills for Grinding and Crushing.*

What I claim as my improvement, and desire to secure by letters patent, is the use of the cylinder D, grooved or notched, or smooth, being made to rotate, and having within it, any number of crushers formed as described, for the purpose of pounding, grinding, or mixing any substance, the crushers either running singly, or, for the purpose of working different substances simultaneously one within another, the jumping bar or pin at N, in combination with the arrangement shown, or any other arrangement substantially the same.

WILLIAM FROST.

No. 7783.—*Improved Annunciator or Bell Telegraph.*

What I claim as new and of my own invention, and desire to secure by letters patent, is the combination and arrangement of the spring levers I, suspender bar or striker F, with the pendulums K, and bells D, for simultaneously indicating the number of the room, and calling the attention thereto, by giving the alarm, there being a secondary or intermediate fulcrum bar L, against which the spring lever I, impinges on its descent, increased by the spring N, by which the rear end is made to descend, and with it the suspended striker F, upon the bells D, and at the same time suddenly elevating the front end of the lever I, and imparting a vibratory movement to its pendulum, said spring levers I, being provided with oblong openings or slots M, through which the fulcrum bar J, passes, for producing the aforesaid action of the spring levers, on its descent upon the intermediate fulcrum bar.

JOHN GARVEY.

No. 7784.—*Improvement in Photographic Pictures on Glass, &c.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the ground or frosted glass, or other semi-transparent substance interposed in connection with the picture, between the source of light and the spectator, substantially as described in the foregoing specification.

FREDERICK LANGENHEIM.

No. 7785.—*Method of Attaching Augers to their Handles.*

What I claim as new in my invention, and desire to secure by letters patent, is the handle made in two parts, one of which D, fits in a socket B, on the other A, and carries a bolt *b*, secured at its end, the said bolt passing through a hole in the auger shank, and screwing into a female screw or nut *a*, in the part A, for the purpose of claspings or firmly holding the auger shank between the ends of the parts A and D, of the handle or stock, in the manner herein described.

JOHN E. LARKIN.



No. 7786.—*Improvement in Copper and Steel Plate Printing Presses.*

What we claim as of our invention, and which we desire to secure by letters patent, are—

Firstly. The arrangement of a tooth or catch, projecting from the roller, and operating upon a tooth or projection upon the platen, for the purpose of starting the platen, and causing the commencement of the convexity of the roller to impinge upon any required point of the length of the platen, for the purpose described.

Secondly. The combination of the racks (8 and 9,) with the cog wheel (*w*,) attached to the connecting rod of a gang of rollers, together with the beads (*p*,) and the grooves (*m'*,) in the rollers, for security, uniformity of action, and a proper relative position between the platen and the supporting rollers, upon which it traverses, thus preventing lateral and longitudinal aberration.

Thirdly. The method of heating and retaining at a suitable temperature, the plate from which the impressions are to be taken, by means of lamps or vessels containing inflammable material, placed under the upper plate of the platen, or traversing bed, within the recess formed between that and the plate resting immediately upon the gang of rollers.

Fourthly. The arrangement of a stationary and sliding clamp, adjustable longitudinally of the platen, for securing the plate in position, substantially in the manner described.

Fifthly. We claim, in combination with the D, roller, the method of retracting the platen by the weighted cord, assisted by making an inclined plane of the bed in which the rollers traverse.

E. C. MIDDLETON.

EDWARD NEVERS.

ROBERT NEAL.

No. 7787.—*Improvement in Excavating Machines.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Operating the bucket O, by giving motion to the band or chain Q, and to the drum I, in one direction, to fill the bucket, and then reversing its motion, so as to draw back the bucket, to be emptied, in the manner substantially as herein described.

Secondly. I claim the manner, substantially as herein described, of closing the bottom or trap P, of the bucket, by means of the spring or incline 17, over which it passes in its forward passage.

MARTIN NEWMAN, 2d.

No. 7788.—*Improvement in Pessaries.*

What I claim, is the solid connector *m*, with its connecting contrivance, (or its equivalent,) and joint, in combination with the supporting stem, the whole being substantially in the manner and for the purpose as herein before specified.

JONATHAN HOVEY ROBINSON.

No. 7789.—*Improvement in Extension Tables.*

What I claim as my invention, is the construction of extension tables in such a manner as that the sliding parts, when extended, shall constitute a table complete, without any replacing of panels to form the leaf, substantially in the manner herein before set forth.

EDWIN F. SHOENBERGER.



No. 7790.—*Improvement in Spark Arresters.*

What I claim as my invention, and desire to secure by letters patent, is combining, in manner substantially as described, with the chimney, the surrounding jacket and the cap a valve for governing an aperture in the top plate of the cap, so balanced or weighted, that it shall open by gravity when the furnace is working under a draft due to the ramification of the column, and be closed by the force of the current when increased by the exhaust steam in the chimney, for the purpose and in the manner substantially as described.

I also claim, in combination with the valve and the wire gauze, or the equivalents thereof, and the deflector over the chimney, all arranged substantially as herein specified, the central tube of the deflector, and the conical ring within the wire gauze, substantially as herein specified, and for the purposes set forth.

SAMUEL SWETT

No. 7791.—*Improvement in Bedsteads.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the slats (*c*,) clasps (*d*,) and hooks (*g*,) athwart the length of the outside slats, in combination with the rails (*e*,) and latches (*f*,) on the posts (*a*, *b*,) the whole combining to form a strong and portable bedstead.

WILHELM ZAISER.

No. 7792.—*Improvements in Machines for Feeding Nail Plate.*

What I claim, is the combination of such raising mechanism, with the machinery for imparting to the strip of metal, its progressive forward movements as specified, the mechanism so combined with the said machinery, being the valve *a'*, the rod *b'*, the lever or arm *c'*, the crank *f'*, shaft *g'*, drum *h'*, belts *i'*, *k'*, and the arms *b'*, *m'*, of the lever beam *R*, the whole being arranged and made to operate together, substantially as specified. And I further claim, in combination with the mechanism, which produces the progressive advancing movements of the strip of metal towards and between the cutters, the mechanism for producing the retrograde movement of the pincers, after the strip of metal has been entirely operated upon by the cutters; such mechanism being the pullies *i*<sup>2</sup>, and *t*<sup>1</sup>, the endless belt *r*<sup>2</sup>, the moveable frame *u*<sup>1</sup>, and clutch or their equivalent, the vertical rock shaft *w*<sup>2</sup>, and its arms *s*<sup>2</sup>, *t*<sup>2</sup>, the cams *g*<sup>3</sup>, *h*<sup>3</sup>, the lifting bar *y*<sup>2</sup>, and its spring catch, together with the slide *d*<sup>3</sup>, and its projections, the whole being constructed and made to operate together, essentially as specified. And I claim the combination of the arms *z*<sup>2</sup>, with the shaft *w*<sup>2</sup>, and the mechanism for moving the clutch, the said arm being for the purpose of creating a retrograde movement of the clutch, so as to unclutch the pulley *t*<sup>2</sup>, from the shaft *e*, and this when the entire retrogradation of the nippers has been effected, the same being accomplished as hereinbefore specified.

And in combination with the mechanism which produces the reciprocating rotary movements of the nippers, or strip of metal held thereby, I claim the combination of mechanism for arresting or stopping such rotary motions, immediately on the final retrogradation of the pincers taking place, such mechanism being the levers *z*<sup>4</sup>, and *n*<sup>3</sup>, connecting rod *p*<sup>3</sup>, arm *q*<sup>3</sup>, shaft *v*<sup>3</sup>, arm fig. 3<sup>3</sup>, spring catch *y*, as applied together, and to the lever beam *R*, and lifting bar *y*<sup>2</sup>, as described.

And I claim the combination of mechanism, by which the progressive advancing and intermittent secondary retrograde movements of the strip of metal are produced, the same consisting of the long bar *l*<sup>2</sup>, and its connecting frame



$p^2$ , the feed and pressure rollers  $f^2$ , and  $m^2$ , the shaft  $g^2$ , and pulley  $f^2$ , the strap or belt  $e^2$ , and its rods  $c^2$ ,  $d^2$ , the levers  $z'$ , and  $v'$ , connected together as described, and the cams  $r'$ ,  $s'$ , on the shaft  $e$ .

And in combination therewith, and the lifting bar  $y^2$ , I claim the bent lever  $i^3$ , the same being applied to the same, and used for the purpose substantially as herein before specified.

FREDERICK J. AYERS.

No. 7793.—*Improvement in Cutters for Planing Machines.*

What we claim as our invention, and desire to secure by letters patent, is arranging a series of shaving knives, in continuous succession, upon the periphery of a conoidal wheel, whereby a continuous serrated shaving instrument is produced, whose uninterrupted action, by preventing jarring, produces a smoother surface.

ENOS G. ALLEN.

CHAS. BRIGGS.

No. 7794.—*Improvement in Ship Ventilators.*

What I claim as my invention, and desire to secure by letters patent, is the combination of floatable valves, with ventilators, for ventilating vessels and steamers, and the combination of floatable valve ventilators, with vessels and steamers. The valves to be acted upon by the raising and the falling of the water, when in contact with the ventilator, the rising water to cause the valve to close the air orifice, and prevent the entrance of water, and the falling water to permit the valve to recede by its own gravitation, and thereby open the air surface.

RALPH BULKLEY.

No. 7795.—*Improvement in Gang Ploughs.*

I claim the inclined coulter, so arranged as to throw out the ploughs without breaking, when they meet with an obstruction, in the manner and for the purpose set forth. I claim the apparatus shown at  $n$ ,  $m$ , fig. 5, for setting the frames for hilling, in the manner above specified.

HENRY COWING.

No. 7796.—*Improvement in Hanging Carriage Bodies.*

What I claim as new therein, and which I desire to secure by letters patent, is the combination of elastic cross reaches, with a non elastic centre support, the reaches being so connected with the centre support, that they shall be free to bend throughout their length, substantially in the manner and for the purposes described.

M. G. HUBBARD.

No. 7797.—*Improvement in Processes for rendering Cordage Uninflammable.*

What I claim as my invention, and desire to secure by letters patent, is my improved process of rendering vegetable fibrous substances uninflammable, and preserving them in that condition, substantially as herein set forth.

JAMES H. JOHNSON.

No. 7798.—*Improvement in Fountain Pens.*

What I claim as my invention, and desire to secure by letters patent, is the pen nib, made to project through the conical termination of the fountain, substantially in the manner and for the purpose set forth, and in connection therewith, I claim making the pen nib adjustable, substantially as described.

CHARLES W. KREBS.



No. 7799.—*Improved method of securing Rails of Rail Roads.*

What I claim as new, and desire to secure by letters patent, is the diagonal position of the horses, by which, with the aid of the arms and clamps, the rails are secured in their proper position.

H. H. MAY.

No. 7800.—*Improvement in Sausage Stuffers.*

What I claim as my invention, and desire to secure by letters patent, is the introduction of a tube or case D, into the case or cage B, of a press, and adapting it thereto, in such a manner as to form a sausage stuffer, in combination therewith, which is operated by the same power and under the same piston and rod, that acts upon the press, as herein substantially set forth.

SIMON McNAIR.

No. 7801.—*Improvement in Screw Threading Machines.*

What I claim as my invention, and desire to secure by letters patent, is the before described method of operating the jaws for gripping and liberating the blank, by means of the toggle joint, and rod connected therewith, when this is combined with the method, substantially as described, of latching and unlatching the rod, by means of the sliding collar acting on the inclined or bevelled stem of the rod to draw it back, and force in the latch, and then holding it in place, by passing on to it, so as to avoid an endwise strain on the mandrel against its boxes, substantially as described, and for the purpose specified.

I also claim so connecting the mould, which governs the line of motion of the chaser, with the sliding frames, so that it shall be free to vibrate thereon, in manner substantially as described and for the purpose specified.

THOMAS J. SLOAN.

No. 7802.—*Improvement in the Locking Apparatus of Repeating Fire Arms.*

What I claim as my invention, consists in hinging the dog or catch, to the bolt, in combination with so making and applying the recess *i*, and the spring *g*, together, and to the dog or catch, as to cause said spring to perform two functions, or to not only operate the dog or catch, but to operate the bolt, substantially in the manner as above described.

JOSHUA STEVENS.

No. 7803.—*Improvement in Shuttle Motions in Looms.*

I claim the boxes *P*, *P'*, oscillating upon fixed points *p*, *p'*, and having the flat bar springs *Q*, *Q'*, attached to them, in combination with the chains *c*, *c'*, and the regulating screw *d*, and nut *e*, for giving a more free and easy motion to the picker staves, and for the more effectually controlling and graduating the amount of pick.

THOMAS T. WILLCOX.

No. 7804.—*Combined Boiler, Cupola, and Grate.*

What I claim therein as new, and desire to secure by letters patent, is the boiler, descending from the top to the bottom of the cupola, in combination with the removable grate, the water contained in the boiler surrounding the heated iron, and coals, substantially as described. I do not claim the use of the subsidiary grate, but I do claim it, as making a part of the combination necessary to the proper and perfect action of my combined steam boiler and cupola smelting furnace.

LOFTIS WOOD.



No. 7805.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is placing one or more ovens between one or more fires on each side in connection with a vertical flue or flues passing between the ovens, separating them, substantially as described.

LOFTIS WOOD.

No. 7806.—*Improvement in Machines for Turning Irregular Forms.*

What I claim as original, and desire to secure by letters patent, is the mode herein described, of changing the position of the ratchet R, by means of the arrangement of the sliding rod, knee, lever, lifting plate and pawl.

SMITH BEERS.

No. 7807.—*Improvement in Machines for Boring Dovetailed Mortises.*

What I claim therein as new, and desire to secure by letters patent, is—

Firstly. The rotating cutters (*g, h, i, k, l,*) formed and arranged substantially as described, with conical heads and cylindrical necks, in combination with a rest or moveable table, for the reception and attachment of the bed-post, the said table while being advanced towards the cutters, being conducted by suitable guides (*p, p', p'',*) as described, either upon the moving table or the stationary bench, in a course which is at first at right angles to the face of the post, and thence, as soon as the cylindrical cutter (*l,*) has begun to act in a longitudinal course, receding sufficiently from the face of the post to form a mortise which shall bind the dovetailed tenons of the rail, as they are pressed down in their sockets.

Secondly. I claim, in combination with the aforesaid guides, the stops (*r,*) substantially as here arranged and applied, or their equivalents, whereby the table is limited in its course, to the particular range of cutting action required for the time being.

HENRY I. BETJEMANN.

No. 7808.—*Improvements in the Alarm and Indicator for Steam Boilers.*

What I claim as my invention, and wish to secure by letters patent, is the peculiar method of moving the indicator, by its attachment to the slide valve of the whistle, by which the connection is continued through the head of the boiler, as herein described, dispensing with the stuffing box and packing.

his  
JOSEPH + DILKS.  
mark.

No. 7809.—*Improved Arrangement of the Bending Roller in Tin Cutting and Bending Machines.*

I claim to so combine and arrange the roller Y, with respect to the jaws E, F, (as specified,) so as to enable the said roller to be operated in the manner substantially as set forth; that is to say, to be moved in a plane parallel to the common axes of the shafts C, D, the said roller being arranged in a turning frame Z, and supported by a moveable and adjusting frame A': and the object of my improvement being to enable a person to move the roller against the tin, in manner and for the purpose of binding it down, substantially as herein before explained.

WM. H. HORTON.

No. 7810.—*Improvements in the Metallic Flask for Casting Large Kettles.*

What I claim as new, and of my invention, is the elastic iron core suppor-



ter, or inner part of the flask, constructed of wings attached to the crown, and provided with covering strips, substantially as described.

WILLIAM KELLY.

No. 7811.—*Improvements in Machines for Dressing Spokes.*

What I claim therein as new, and desire to secure by letters patent, is—

First. Constructing a cylindrically rotating cutter head, with a separating joint athwart its middle, and in the plane of its rotation, so arranged as that by the mutual advance or recession (in the direction of their axes of rotation) of the respective sections of the cutter heads, as they traverse the length of the stuff, the cutting edges are adapted to impart the varying outline and form required for the work.

Second. The shafts (9,) and weighted levers ( $b'$ ,  $b'$ ,) in combination with the levers ( $v''$ ,  $v''$ ,) and the links ( $w$ ,  $w$ ,) or their equivalents, for sustaining in position the tongues (11,) upon the spoke, and the rollers ( $r$ ,  $s$ ,) upon the guides, and rendering them self-adjustable, under all the circumstances which can affect them.

ORVILLE MATHER.

No. 7812.—*Improved Nail Plate Feeder and Turner.*

What I claim as my invention, and for which I ask letters patent, is—

First. Giving the alternating motion to the nipper rod, by means of a pair of jaws actuated by the opposite ends of a vibrating beam, one of the jaws being provided with a spring and toggle, which causes it to grasp and release the nipper rod, the whole operating substantially as described.

Second. I claim giving to the said rod its progressive, advancing and slightly retrograde motions, by means of a pair of jaws actuated by a cam and an eccentric, and two springs, substantially as specified.

Third. I claim operating the follower, so that it is raised from the nail plate, and the nail plate from the lower cutting jaw of the machine, by means of a cam, a rock shaft, and a radius bar connected to one end of the follower, substantially as described.

Lastly. I claim transmitting the motion from the nail machine to the feeding machine, by means of a lever beam and connecting rods, when the lever beam is hung upon a cranked centre, and the actuating connecting rod is provided with knob acting upon a flat crank pin, substantially as described in the annexed specification and drawing, whereby I am enabled, with facility, to throw my feeding machinery in and out of gear.

But I do not intend, hereby to confine myself to the particular forms and proportions herein described, provided I construct a machine substantially the same.

MELVILLE OTIS.

No. 7813.—*Improvement in Horse Rakes.*

What I claim as my invention, and desire to secure by letters patent, in my improved horse rake, is the device for raising the teeth simultaneously, to clear them of the hay, and dropping them again, by means of the apparatus, substantially as described, being worked by the draught of the team, when thrown into gear, at the will of the operator.

HENRY W. SABIN.

No. 7814.—*Improvement in Suspender Buckles.*

What I claim as my invention, and desire to secure by letters patent, is



the construction of the buckle frame, and attaching the tongue or points thereto, so that the tongue or points slide out and into the buckle, instead of acting upon a hinge or roller, as above described.

ELISHA STEELE.

No. 7815.—*Improved Auger Handle.*

I claim the construction of auger handles, substantially as set forth in the above specification; that is, by making the principal part of the same, from end to end, of one piece of wood, or material, securing the central portion, through which the auger shank passes, with a metal band, and arranging a detent, for holding the shank, with machinery to operate it, as exhibited in the drawings forming part of this specification, the said handles being for use with augers or any other tools to which it may be adapted.

AUGUSTUS THAYER.

No. 7816.—*Improvement in Vulcanizing India Rubber.*

What I claim, therefore, is the use and employment of zinc, prepared by the process above described, whereby a hyposulphite, or similar preparation of zinc is obtained, in combination with India rubber, for the purpose of curing or vulcanizing it, substantially as herein before set forth, without the use of free sulphur in any way, in combination with the rubber.

JONATHAN T. TROTTER.

No. 7817.—*Improved Balance Boiler Feeder.*

What I claim therein as new, and desire to secure by letters patent, is having the piston B, with compartments and apertures, as described, passing completely through the boiler, and working in double packing boxes in short cylinders c, c, placed on opposite sides of the boiler, substantially as herein set forth.

W. D. ALLEN.

No. 7818.—*Improvement in Buckles for Harness.*

I claim the construction of a trace clasp, as a substitute for a buckle, for fastening together two straps of leather, by the use of a metal tongue fastened to one of the straps, having projecting from it pins or studs fitted to enter into holes to be made therefor in the other strap, the tongue and strap lying one against and upon, or near the other, the tongue and strap to be kept in this juxtaposition, by a slide or box enclosing them, the whole substantially as set forth in this specification.

SOLON BINGHAM, JR.

No. 7819.—*Improvement in Bearings for Axles and Shafts.*

I claim the combination of the sliding plate E, having a conical seat a, and the conical packing ring F, applied and secured to the journal box of a car or other axle, or of a machine shaft, in the manner substantially as herein described, for the purposes set forth.

WM. H. HOVEY.

No. 7820.—*Improvement in Lever Jacks.*

I claim the hanging of the lever by links which permit the lever teeth to disengage themselves from those of the rack bar, with which they are engaged, by simply raising the lever, and allow them to re-engage with a new set of teeth, when the lever is depressed, substantially as herein set forth. I



also claim the method of connecting the pawl with the lever, in such manner, that, by simply working the latter, the rack bar with the weight resting thereon, may be lowered tooth by tooth, substantially as herein set forth.

JAMES LEFFEL.

No. 7821.—*Improvement in Electrotyping.*

I claim to form a heterogeneous substance on the surface of the metallic plate, by exposing it to the action of iodine, bromine, chlorine, or other chemical, capable of forming an insoluble compound with the metal, for the purpose herein set forth.

I also claim to expose the metallic plate to the action of the light, after being acted on by a halogen element, substantially for the purpose of preventing the adhesion of the deposite as specified.

I claim the use of iodine in the electrotpe process, in the manner herein substantially set forth, and for the purpose specified.

GEORGE MATHIOT.

No. 7822.—*Improvement in Seed Planters.*

What we claim as new, and desire to secure by letters patent, is the combination with the depositing tube, and the bar which connects said tube with the body of the machine, the joint *m, n*, as above described, said joint being of such peculiar construction as to be complete and effective in itself, without any movable device whatever, and which admits of attaching or detaching said tube at pleasure, without the use of any kind of implement or tool, or separate connecting bolt or fastening, as before described.

SAMUEL PENNOCK.

MORTON PENNOCK.

No. 7823.—*Improvement in Seed Planters.*

What I claim therein as new, and desire to secure by letters patent, is the upper and lower sliding bottoms *n, n, l, l*, in combination with the adjustable side of the hoppers *r, r*, operating in the manner and for the purpose, substantially as herein described.

DEXTER B. RHODES.

No. 7824.—*Improvements in Sewing Machines.*

What I claim as my invention, is the combination of two needles, two thread guides and a cloth holder, made to operate together substantially, in the manner and for the purpose as herein before set forth.

And I also claim the improvement of making the needles with springs, and applying mouth pieces or pressers to them, and on each side of the flanch of the base plate, the whole being substantially as above described.

FREDERICK R. ROBINSON.

No. 7825.—*Improvement in the Manufacture of two and three Ply Carpets.*

What I claim therefore, as my invention, and desire to secure by letters patent, in the weaving of two or three ply ingrain carpets, is the employment of parti-colored warp and weft, operated by jacquard or other mechanical means, to form the figure when the same colors in the warp and in the weft, are caused to combine together, to form the same colored figure in the fabric, substantially as described.

ALEXANDER SMITH.



No. 7826.—*Apparatus attached to Vessels for Indicating the depth of Water.*

What I claim as my invention, and desire to secure by letters patent, is the combination of a sounding chain or jointed rod, with an indicator on the deck of a vessel, operated by means of a cord pulley, or other equivalents, so as to indicate the depth of water, whilst the boat is making headway, as herein described and represented.

H. B. SOMMERS.

No. 7827.—*Improvement in Planing Machines.*

I claim, first—the attachment, either whole or in segments, of a narrow circular saw blade to the front of the periphery of an iron or other metallic planing wheel, (properly counter sunk for the purpose,) in combination with the clearing and planing cutters, so that the saw shall be stiffened, and rendered free from trembling, shaking, or running in, and made to cut in advance of the planing cutters to cleanse and level the surface of the plank or timber, that the planing cutters may with facility, produce an extra smooth surface, and be cleared of timber or slab, by the clearing cutters as set forth, the attachment of the saw blade to the wheel being such, by screws or otherwise, that the saw blade may be easily removed or taken off, for the purpose of turning the reverse face to the plank or timber whenever the teeth on one side have become dulled, or out of set from long usage against the timber.

Second: The clearing cutters *n, n, n*, in combination with the saw and planing wheel, arranged in the manner and for the purposes herein set forth, the whole being arranged in the manner and for the purposes herein set forth and described.

DANIEL H. SOUTHWORTH.

No. 7828.—*Improvement in Elevating, Cooling and Conveying Flour.*

What we claim as our invention, and desire to secure by letters patent, is the method of elevating, conveying, and cooling flour or meal, by passing it by means of a blast through an air-trunk and head, constructed substantially as herein set forth.

JESSE WHITE.

JONATHAN BUNDY.

No. 7829.—*Improvement in Machines for making Pill Boxes.*

What I claim as my invention, is the contrivance for supporting the stick, and feeding each stick forwards towards the cutters, the same consisting of the saddle and orifice, (applied to the rotary block holder,) the endless screw D, the shaft E, the spring G, the bearing plate *g*, fixed to the shaft B, the pinion H, and the stationary gear wheel I, the whole being applied and made to operate together, substantially in the manner as above set forth.

What I claim also as my invention or improvement, is the combination of said saw, with the rotating series of sticks, or their rotating holding frame, substantially in the manner, and so that they shall be successively operated upon by it as specified.

NELSON D. WHITE.

No. 7830.—*Improved Cut-off Motion for Puppet Valves.*

What I claim therein as new, and desire to secure by letters patent, is :  
Firstly. Raising and dropping at any desired point, the puppet valves that admit steam to the cylinder by means of a lifter, that vibrates with and upon the usual rock shaft, the said lifter being operated by a gravitating and counterbalancing toggle as described, so that the lifter in the manner described, or its equivalent, is fixed for raising the valve, and is depressed and allowed



gradually and easily, to drop the valve when the counterbalance of the toggle, is operated by the adjustable stop, substantially as herein described.

SAMUEL H. GILMAN.

No. 7831.—*Improvement in Seed Planters.*

What we claim as new and of our invention, and desire to secure by letters patent, is dividing the drill teeth or depositing tubes into two separate sections G, H, and hinging or connecting the two sections at their upper ends, in such a manner as to permit the longest or rear section H, to recede, or turn on its connecting pin *a*, while the upper or short section retains its proper position in relation to the drag bar and flexible conducting tube, and providing the upper or short section G, with two arms J, J, having notches therein, which, when the two sections of the drill tooth are closed, become co-incident with a notch formed in an arm K, projecting from the rear or longest section H, into which is inserted a wooden pin, which it is intended shall break when the rear or longest section of the drill teeth, shall strike against a rock or other obstruction, and thus separate the sections, and permit the longest section H, to recede and clear itself from the obstruction, whilst the flexible conducting tube is held in its proper position by an oval loop on the inside of the section G, herein fully set forth and represented.

Second. We also claim, providing the clutch plate R, with an additional row of teeth (*l*), adjacent to the side beam of the frame, for engaging with a tooth T, projecting therefrom, for arresting the motion of the seeding rollers simultaneously with unlocking the axle from the propelling wheel, and thus stop the operation of the machine, as fully set forth.

JOHN SIGNER.

T. N. SHEPTON.

No. 7832.—*Improvements in Mills for Sawing with Circular Saws.*

What I claim as new and of my invention, and desire to secure by letters patent, is—

First. The springs G, and G', carrying the journal boxes *g*, and *g'*, attached and arranged in the manner substantially as herein described, for the purpose of guiding the saw, but at the same time allowing a sufficient degree of end play to the spindle, to admit of its accommodating itself to the lateral springing of the log.

Secondly. Arranging the saw N, and its spindle M, on the swinging frame H, H, which is adjustable, so as to bring the saw N, in any required position in a line forming part of a circle round the axis of the saw D, and adjusting the said saw N, either in a line with, or to the right or left of the saw D, by means of the slot in the spring G', through which the bolt *b*, passes, in the manner herein described, or in any manner substantially the same.

ORLANDO CHILD.

No. 7833.—*Improvement in Machinery for Doubling and Twisting Silk, &c.*

What we claim as new, and desire to secure by letters patent, is so constructing the catch bar, that all the threads or silk, either before or after being twisted, may be secured by the catches simultaneously, by simply bringing the bar with its catches down upon the threads, and whilst in that position causing all the helical springs to act on the catches at the same time, by suddenly disengaging the slide lock plate from the end of the bar, the mortises in the said



plate, being so formed as to allow each catch to be opened separately, without the aid of the lock plate, or all to be opened simultaneously by moving said lock plate longitudinally, in the manner herein fully set forth.

JOSEPH CONANT.

LUCIUS DIMOCK.

No. 7834.—*Improvement in Apparatus for emptying Privies.*

What I claim as new therein, and which I desire to secure by letters patent, is the gasometer, connected with the receiver, as described, for the purpose of keeping the gases separated from the fecal matter, and preventing their mixture as set forth, and serving also as a reservoir for the compressed gases, from which the power for expelling the contents of the reservoir is obtained.

FLORIMOND DATICHY.

No. 7835.—*Improvement in Carriages.*

What we claim as new therein, and desire to secure by letters patent, is the joint on which the fore carriage turns when placed in rear of the fore axle, in combination with the segment on which the end of the perch rests, substantially as described, for the purpose of allowing the carriage to be turned in a small space, without having the fore wheels to run under the body, or interfere with the hind wheels.

EDWARD EVERETT.

CHARLES EVERETT, JR.

No. 7836.—*Improvements in Machinery for Cutting and Bending Sheet Metal.*

I claim the improvement in the bending mechanism, the same consisting in the combination of the conic or approximately conic roller or projection *n*, with the cylindric part or roller *m*, and with the circular discs or holders, in the manner as above described, and so as when pressed against the tin to gradually bend it over and down upon the disc or holder *C*, so as to enable the roller *m*, to pass over and upon the tin, and complete the bending of it down upon the periphery of the holder.

I also claim the improvement in the construction of the gauge *B*, whereby it is adapted to operate when the tin plate is rotated in a vertical plane, such improvement consisting in arranging its supporting journal at an inclination to the horizontal plane, and applying a weighted arm or its mechanical equivalent, to the gauge, as seen in the drawings, or so that the gravitating power of the weighted arm shall restore the gauge to its original and proper position under the holders, after it has been freed from the pressure of the surplus tin, or part removed by the cutters.

JOSEPH F. FLANDERS.

No. 7837.—*Improvement in Seed Planters.*

What I claim as my invention, and desire to secure by letters patent, is the peculiar construction of the adjustable shovels *N*, to clear the mouth of any obstructions. I also claim the mode and manner of sowing the grain through the slots, as herein described.

JOSEPH W. FAWKES

No. 7838.—*Improved Expansion Gear for Horizontal Engines.*

What I claim therein as new, and desire to secure by letters patent, is with drawing the sliding tongue of the lifter of the supply valves of steam cylinders,



so as to trip the valves at any desired point, by an adjustable prong, which is made to slide upon the arm holding the usual fixed prong, by the action of a tappet on the rock shaft, when this adjustment is effected by means of the shackle and links within the steam chest, the shackle and links being elevated or depressed by an index arm without side of the steam chest, and the whole being arranged and operating, substantially as herein described.

SAMUEL H. GILMAN.

No. 7839.—*Machine for making Eyelets.*

What I claim as my invention, and desire to secure by letters patent, is the sliding bolster, constructed with its two dies *c*, and *e*, and aperture *n*, in combination with the feeding tube, punches, and clearers, the whole being constructed, arranged and operated, substantially in the manner and for the purpose herein set forth.

L. E. HICKS.

No. 7840.—*Improvement in Grain Cradle Fingers.*

What I claim as my invention, and desire to secure by letters patent, is the insertion of a metallic plate into the edge of a cradle finger, by means of rivets and other fastenings, so as to keep the plate and finger permanently attached together, and in their place, and thereby effectually prevent the finger from straightening or springing back, when used in damp grain, prevent the grain from wearing it away, and prevent the grain from sliding endwise off the cradle, before the cradler gets it round into its own swath.

JOEL HOUGHTON.

No. 7841.—*Improved Sash Fastener.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the cam with the plate, when these are combined with the shaft *C*, and lips *B*, for turning back the cam when necessary, and locking it to fasten down the lower sash, when the whole is constructed, arranged, and combined, substantially as herein described.

WILLIAM H. LAZELLE.

No. 7842.—*Improved arrangement of Steam Engine.*

What we claim as our invention, and desire to secure by letters patent, is the arrangement herein set forth, of the beams, connecting rods, and cranks, of the two cylinders of a double cylinder engine.

RICHARD F. LOPER.

JOHN W. NYSTROM.

No. 7843.—*Improved Composition for making Cores for Casting.*

What I claim therein as new, and desire to secure by letters patent, is the use of white of egg, as a component in the preparation of loam, for cores and other similar things, intended for contact with molten metal, in the manner herein described, limiting myself to that use of white of egg, but not limiting myself to the precise proportions mentioned, while the same result is obtained by the said addition to the ingredients ordinarily used in loam for cores.

EDWARD REES.



No. 7844.—*Improvement in Mills for Grinding.*

What I claim, is hanging the bed stone, (when the shaft or spindle to which the runner is attached, passes through the same,) by means of the before described universal joint, in combination with the lever and screw, as aforesaid.

JOHN ROGERS, JR.

No. 7845.—*Improvement in Oscillating Seeding Cylinders.*

What I claim as new, and of my invention, and desire to secure by letters patent, is oscillating the seeding cylinder H, upon its axis, for the supply and discharge of the seed as described, by means of the combination of the lever L, spring N, and pins M, with the propelling wheel B, as described.

DAVID E. ROHR.

No. 7846.—*Improved Instrument for laying down Curves of Ships' Timbers.*

What I claim as my invention, and desire to secure by letters patent, is the adjustable mould, constructed substantially as herein set forth, so that it can be set to the outside and inside curves of the timbers of a vessel, and can then be used to mark them upon the wood, of which they are to be formed.

CHARLES SCALES.

No. 7847.—*Improvement in Artificial Legs.*

What I claim as my invention, and desire to secure by letters patent, is the application of the whole action from the heel up to the knee joint in the artificial leg, which action prevents the knee joint from turning, slipping, or revolving out in the act of stepping, as herein described, using for that purpose the aforesaid springs, rod, lever, and pins, or any other substantially the same, and which will produce the intended effect.

W. C. STONE.

No. 7848.—*Improvement in Lamps for lighting Gas Burners.*

What I claim as my invention, is the protector, as made and applied to the lamp, and so as not only to be capable of exploding or inflaming the gas brought into contact with it, substantially as specified, but of protecting fibrous matters which may come in contact with the protector, from direct exposure to the flame.

ROBERT THOMPSON.

No. 7849.—*Improvement in Fanning Mills.*

What I claim therein as my invention, and desire to secure by letters patent, is the supporting and regulating the motion of the sieves *g, f*, by means of the rollers *c, c*, or their equivalents, and the spiral springs *F, F*, so arranged as to press the shoe, or sieve frame *A*, down upon the rollers, steadying its motion, and to a certain extent preventing any jar at the end of each vibration, substantially in the manner and for the purpose as herein set forth.

E. BLISS.

No. 7850.—*Improvement in the Manufacture of Starch from Maize.*

What I claim therein as new, and desire to secure by letters patent, is the method, substantially as described, of extracting from maize, and other grain or seeds subject to rapid putrescent decomposition, that portion of the starch which is inextricable, either by mechanical means, or by fermentation of the meal, by the subjection of the unbroken grain to an incipient germination,



which is arrested at that stage of the vegetative action at which the starch that exists in the insoluble combination, being liberated, is capacitated for precipitation along with the free starch, by any of the usual processes of maceration and elutriation.

THOMAS BRAGG.

No. 7851.—*Improvement in Dampening Paper for Copying Presses.*

I do not confine myself to the employment of sheet metal as a material for my dampening tablets, as many other impermeable materials are well suited to the purpose, but what I claim as my invention, and desire to secure by letters patent, is a dampening tablet, constructed substantially as herein described, of some impermeable material.

GEO. BURNHAM.

No. 7852.—*Improved means for preventing back-lash in the Feed Motion of Planing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the combination in the travelling table motion of planing machines, of two racks  $L^1$ ,  $L^2$ , sheets 1 and 2, operated on by two separate pinions M, N, one of which is made adjustable, shown by set screws  $m, m, m, m$ , with accompanying parts, and so arranged that the pinions M, N, may be set as to alternately operate; the one to drive the table forwards, and the other to drive it backwards, for the purposes herein set forth, and operating as shown and described, or in any manner substantially the same.

THOMAS H. BURRIDGE.

No. 7853.—*Improvements in Hydraulic Blowers.*

What I claim as new therein, and which I desire to secure by letters patent, is—First. The apparatus, substantially as above described, consisting of a revolving drum, partly filled with water, and provided with chambers, valves, &c., which cause the air to enter at one hollow journal, and escape in a compressed state at the other, for the purpose of producing blast, as set forth.

Second. I claim the manner of separating the water accidentally mixed with the blast, by means of the partitions and cells in the chambers ( $l$  and  $n$ .)

Third. I claim the pipe ( $u$ ), for conducting the water accumulated in the chamber ( $n$ ), to the hollow journal ( $c$ ), and returning it to the drum, substantially as described.

JEREMIAH DARLING.

No. 7854.—*Improvements in Vats for Tanning Hides.*

What I claim as of my own invention, and which I desire to secure by letters patent, is the slats, as described, in combination with the vat and the handler, substantially in the manner and for the purposes as herein set forth.

LEWIS C. ENGLAND.

No. 7855.—*Improvements in Printing Presses.*

What I claim as my invention, and desire to secure by letters patent, is—

Firstly. The combination of the rocker shaft C, and rocker arm D, and the fork lever A, with the swing platen, substantially in the manner and for the purpose herein set forth.

Secondly. I claim for feeding cards, the slide  $k$ , and rods  $m$ , in combination with the swing platen, substantially in the manner and for the purpose herein set forth.



Thirdly. I claim the combination and arrangement of the gauge *s*, the spring *u*, the lever *v*, the trip *w*, the catch *x*, and the wire *y*, with the swing platen, in the manner and for the purpose herein described.

Fourthly. I claim the knees *c*, to support the inking rollers, in combination with the spiral springs *h*, the rods *f*, the plate *l*, and the set screws *k*, substantially in the manner and for the purpose herein set forth.

CHARLES W. HAWKES.

No. 7856.—*Apparatus for Operating Window Blinds and their Slats.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the shaft *P*, having two levers *J*, *G*, thereto attached, with the connecting rod *L*, attached to the blind or shutter, the whole arranged substantially as herein described, and constituting a blind or shutter opener.

I also claim, in combination, the hollow shaft *I*, having a lever *D*, at one end of the same, and two arms *B*, *H*, at its other extremity, the bolt *A*, with its bracket *N*, and slot *Q*, and the two pins *C*, *C*, attached to the blind rod *E*, the whole forming an apparatus for working the slats and fastening the blind, when closed, substantially as herein described.

JOHN JONES.

No. 7857.—*Improvement in Attachments to Pumps for agitating the surface of the Water in the Well.*

What I claim therein as new, and desire to secure by letters patent, is the application of a series of floating blades to the rod that operates the plungers of pumps for cisterns or wells, for the purpose of agitating the surface of the water, and this I claim, whether the blades and rod are reciprocally prepared, in the manner described, or in any other equivalent way to effect the same purpose.

W. D. MAYFIELD.

No. 7858.—*Improvement in Instruments for Vaccinating.*

What I claim as my invention, is the sliding lancet *B*, when in combination with a cylinder *A*, charger *E*, piston *H*, and springs *J*, *K*, in the manner and for the purpose above set forth.

HENRY MELLISH.

No. 7859.—*Improved method of loosening Metallic Cores from Hollow Castings.*

What I claim as my invention in the above described mode of casting, is the application of cold water to the core or inner metallic flask of a hollow casting, when the metal begins to cool, so as to loosen the core (by the contraction caused by the action of the water,) sufficiently to remove it without injury to the casting.

JOHN C. PARRY.

No. 7860.—*Improvement in Portfolios.*

What I claim as my invention, and desire to secure by letters patent, is the roller back, in combination with the strings stretched thereon, the device, or its equivalent, at the ends, for securing and for tightening or loosening the strings, and the binders, to secure the sheets in their proper places.

JAMES SHAW.



No. 7861.—*Improvements in Looms for weaving Figured Fabrics.*

What we claim, and desire to secure by letters patent, is the improvement on the jacquard loom, as herein described, to wit: the horizontal harness, shafts or bars, of such length as may be desired, (according to the width of the cloth) upon which the several mail cords or heddles, which constitute the harness or entire mounting, are distributed, at any required distance from each other, together with their hooks, pins, loops or holes, upon or in which the several mail cords or heddles, which are caused to be raised or operated upon by one needle or distinct movement, are separately fastened or attached.

We also claim the improvement for producing the rotation of the pattern prism; the same consisting in combining with the machinery which advances the pattern prism, other mechanism, which at the same time, shall produce a movement of the draw pawl in an opposite direction, as described.

S. T. THOMAS.

EDWARD EVERETT.

No. 7862.—*Improvement in Mills for Grinding.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the hollow spindle A, feeding tube E, and adjustable screw *a*, with the gimbal *i*, when said gimbal is placed above the openings through which the grain, or other material to be ground, passes to the surfaces of the stones, as herein fully set forth and represented, for the purpose of having an uninterrupted feed through and past the gimbal.

JOSEPH N. WALKER.

No. 7863.—*Improvement in Hot Air Furnaces.*

What I claim as my invention, and desire to secure by letters patent, is the annular flue between the cylinder of tubes, and the external casing of the furnace for the purpose of distributing the heat, equally over the external casing, substantially as described.

I also claim the distributor or annular distributing chamber, provided with arched passages, for the purposes of carrying the heat and products of combustion to the exit chamber, and which also admit of the free circulation of the external air in and around the fire-pot, substantially in the manner and for the purpose described.

GEO. E. WARING.

No. 7864.—*Improvement in Machines for Weighing Grain.*

What I claim as new, and desire to secure by letters patent, is the employment of the gate rod (*f*,) connecting to the sliding gate (*e*,) and weighing beam (*d*,) in combination with the said sliding gate and weighing beam, constructed and operating as aforesaid, for opening and closing the gate, to admit the grain to the dish or scale, or exclude it therefrom at the required periods, by the ascent and descent of the dish or scale, during the operation of weighing and discharging the grain, as herein fully set forth.

I also claim the manner of attaching the vibrating weighing scale *l*, to the weighing beam *d*, so that the said weighing scale, as soon as the required quantity of grain shall have entered it, shall descend and close the gate, and bring the hammer end *j*, of the gate rod against the lip of the dish or scale, and cause the scale to turn on its centre *m*, and discharge its load of grain, and immediately ascend and strike the gate rod and re-open the gate, and assume its former position for another weight of grain; every operation of the



weighing apparatus being indicated by an index of the ordinary construction affixed to the end of the scales, the said scale being arranged below a hopper of the ordinary construction.

I likewise claim turning the short end of the weighing beam upwards, in the manner represented in figure 1, and placing the arms to which the bale of the scale are suspended, on a line drawn through the fulcrum of the weighing beam, forming an angle of about fifty degrees, with a horizontal line passing through said fulcrum, for the purpose of increasing the leverage of the short arm of the beam simultaneously with diminishing the leverage of the long arm as the scale or weighing dish descends, by which the gate is acted upon with increased speed and force, enclosing the same.

S. R. WILMOT.

### PATENTS RE-ISSUED DURING THE YEAR 1850.

No. 158.—*Improvement on the Carding and Spinning Machines denominated the Card Spinner for Manufacturing Yarn from two or more different Materials at the same time.*

What I claim as new, and desire to secure by letters patent, is the combination by which the said composition, thread, or yarn is, produced as above described, consisting of the delivering rollers *b*, and *c*, between which the covering material and the thread to be covered, come in contact as described, combined with the said doffer cylinder *a*, the spindle *d*, for twisting the thread while it is in contact with the covering material and the spool *g*, supplying the thread to be covered, all as described and represented in this specification, and the accompanying drawings or their mechanical equivalents in like combination, and for the purpose set forth.

R. S. STEUART,  
*Ex'r of Geo. Law.*

No. 159.—*Improvement in Churns.*

What I claim as my invention, and desire to secure by letters patent, is the series of parallel floats or beaters (*a, a,*) formed and arranged within the agitator, substantially as above described, so that when their motion is reversed, their thick inclined rear edges, will gather the butter into a roll in the centre of the agitator, substantially as herein set forth.

Z. C. ROBBINS.

No. 160.—*Improvement in Cooking Stoves.*

Having thus fully described my improvements, what I claim as my invention, and desire to secure by letters patent, is the moveable back plate (*h,*) for contracting the fire, and protecting the oven plates, as herein set forth: and I wish it to be understood, that I do not claim the employment of double plates at the back of the fire, when such plates are stationary, but only when made moveable; so that the front and top plates of the oven are always protected back as far as the flanch on the moveable plate extends.

I also claim, in combination with the elevated fire chamber, and projecting



oven under a part of said fire chamber, the ash-pit, formed by projecting the bottom and sides of the stove under the sunk hearth, which is level with the bottom of said fire chamber.

JAMES ROOT.

No. 161.—*Improvement in Curry Combs.*

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is combining the trough shaped bars (*a*,) which have the comb teeth on their edges, with the folded strips of metal (*b*,) and with the wires (*c*,) running through them, in the manner substantially as herein set forth, so as to form a curry comb with open or hollow back. I do not claim, separately, either trough shaped comb bars, or combs with open backs, but only in the combination herein set forth.

I also claim the shank, constructed with the fastening hole therein, made without drilling or welding, and combined with the comb as herein above described, so as to act as guards to the ends thereof.

WILLIAM BEACH.

No. 162.—*Improvement in Distilling Apparatus.*

I do not claim the use of charcoal as an absorbent of the essential oil, nor of the process of passing the vapors from the boiling liquid, through successive masses of a rectifying substance, neither do I claim the condensation of the aqueous vapor, by passing the ascending vapors through chambers cooled below the boiling point of water, nor the flavoring of a spirit by passing its vapor through any particular flavoring substance, as I am aware that all these things have been long since done.

But what I do claim as my invention, and desire to secure by letters patent, is the particular construction and arrangement of the rectifier, as herein set forth; that is to say, first—constructing the rectifying chambers and water cases with charging holes, substantially as herein set forth, by which means the various substances employed to rectify, or to flavor the spirit, can be easily charged into or discharged from any one chamber without dismounting the apparatus, or removing the substances in the other chambers.

Second. The particular form of the rectifying chambers, which are made of the frusta of two cones united at their bases, the upper forming the condensing surface of the aqueous vapor.

CHARLES A. KRECHLER.

No. 163.—*Method of Attaching a Ball to a Cartridge.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein described, of attaching or joining to a ball, a cartridge, made of wood or other equivalent material, in manner substantially as herein described.

WALTER HUNT.

No. 164.—*Loaded Ball.*

What I claim as my invention, and desire to secure by letters patent, is making metallic balls for fire arms, with the rear part thereof cylindrical, and a cavity in the said cylindrical part of sufficient capacity to receive the entire charge of gunpowder, substantially as herein described, when the said charge is retained in the ball by a cap or the equivalent thereof, having a central hole through which the charge can be inflamed, substantially as described.

WALTER HUNT.



No. 165.—*Machine for cutting the Threads of Wood Screws.*

What is claimed as new, and desired to be secured by letters patent, is—

First. In combination with the shaft or mandrel, which gives the rotary motion to the screw blank, the employment of the rotating wedge formed cam, or the equivalent thereof, for determining the pitch of the thread, and for permitting the return motion to repeat the operation, substantially as described.

Second. Causing the chaser or cutter at each successive cut to approach nearer to the axis of the screw blank, by means of a revolving conical cam, which at each successive operation acts by a greater radius, substantially as described.

Third. Governing the motions of the chaser or cutter, to make the core or body of the screw, of a conical or tapered form along the whole or any part of its length, by combining therewith a cam of gradually enlarged diameter, substantially as described, the form of such cam depending on the form intended to be given to the core or body of the screw.

Fourth. Combining the cam which determines the form of the core or body of the screw, to make it tapering or conical in whole or in part, with the chaser or cutter, by means of a rock shaft and adjusting lever, substantially as herein described, the said adjusting lever being interposed between one of the arms of the rock shaft, and the face of the cam, so that by the use of a set screw or other analogous device, the cutter or chaser may be readily set, as described.

Fifth. Shifting the cam which determines each successive cut of the chaser or cutter, by combining therewith a ratchet movement, operated by an eccentric or cam, the wheel of the ratchet being provided with pins which operate a lever connected with the cam to shift, substantially as described.

Sixth. Disconnecting the shaft or mandrel from the driving power, at the end of each complete operation of the machine, by combining the clutch or the equivalent thereof, with the ratchet by means of an index wheel or perforated rim, which, at the required periods liberates or acts upon the connections of the clutch to disengage it, substantially as described.

Seventh. Making the chaser or cutter for chasing or cutting the threads of wood screws by machinery, with a groove of the form of the thread in its cutting face, and in the direction of its length, substantially as described, whereby the said chaser can be sharpened, by simply grinding off at the end, and without changing the form of the groove, and whereby also, the said chaser cuts on both sides of the thread, and finally on the edge thereof, as described.

CULLEN WHIPPLE.

No. 166.—*Improvement in Cooking Stoves*

What I claim as my invention, and desire to secure by letters patent, is—

First. Making the back of the oven, of a series of vertical flue tubes, in combination with the flue tubes in the bottom, substantially as herein described, to equalize the heat of the oven.

Second. I claim lining the inside surface of the bottom plate of the stove, with some refractory earthy cement or polished substance as described, in combination with the series of flue tubes constituting the back and bottom of the oven, for the purpose and in the manner substantially as described.

Third. I claim making the front part of the top plate separate from, and attached to the top plate by bolts or otherwise, substantially as described, when combined with the sunken connecting piece (h,) whereby the cracking conse-



quent upon overheating and unequal expansion and contraction of that part which is exposed to a high temperature is prevented.

Fourth. I claim the combination of a fire box, made with a grate or openings for draught in the bottom thereof, substantially as described, with the coal feeder having an aperture or apertures for draught, between it and the upper edge of the fire pot, substantially in the manner and for the purpose above described. I am aware that a series of hook formed wipers playing between the grate bars, and arranged on a shaft, have been heretofore patented, for clearing the grates of an iron furnace, but these can only be turned in one direction, by reason of their hook form, and on this account, are not practically useful. I do not therefore, claim broadly the use of cam formed wipers, unless they are so formed that they can be operated in opposite directions, but

I do finally claim, in combination with a grate, a series of eccentric plates or cam formed plates, of equivalent form, arranged on a shaft, so located relatively to the grate bars, as by the vibration of the shaft in either direction, the said plates shall play between the grate bars, and separate and clear out cinder, slag, and other hard substances, substantially as herein described.

JORDAN L. MOTT.

No. 167.—*Improvement in the method of Rendering Lard.*

What I claim as my invention, and desire to secure by letters patent, in the above described apparatus for extracting or rendering lard, &c., by the action of high pressure steam, is combining with a steam tight tank, substantially such as herein described, and provided with one or more discharge holes, for the discharge of the residuum, and with a perforated steam pipe at bottom, for the introduction of high pressure steam, a perforated false bottom above the steam pipe, to sustain the charge under the weight and pressure, substantially as described, to admit of and insure the free passage of the steam thro' the charge, and also the free descent of the water of condensation, as described.

I also claim, in combination with the tank, substantially such as herein described, the employment of one or more try cocks near the top thereof, and a regulating discharge cock at or near the bottom, substantially as herein described, for the purpose of ascertaining when too much water of condensation has accumulated, and to discharge the same, to retain a sufficient space above for steam, to insure the passage of steam through the charge, as described.

And finally, I claim, in combination with a tank, substantially such as herein described, and for the purpose specified, the employment of a series of discharge cocks, arranged at different levels, substantially as described, for the purpose of drawing off the rendered lard, &c., as it floats on the water of condensation, and thus insure the separation of the pure lard, &c., from all foreign substances, when this is combined with the relief or discharge cock, substantially as described.

EBENEZER WILSON.

No. 168.—*Improvement in Pumps.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the nozzle with the pump barrel, in such a manner that the nozzle can be readily changed from side to side, and secured in any desired position, substantially as herein represented and described.

I also claim the manner of connecting the induction pipe J, the valve n, and its seat E, with the base D, of the pump, without the aid of rivets or solder,



and in such a manner that when the base of the pump has been securely fastened to a platform, the respective parts of the pump, as also the induction pipe, can be combined with the base, or detached therefrom, without disturbing its fastenings, to wit: by means of the cup rising from the centre of the base D, which has a screw cut in its inner periphery, and a hole in the centre of its bottom, through which hole the induction pipe J, is inserted, and enlarged by a mandrel; the metallic disk E, placed within the said cup, with the tube S, descending therefrom, inserted into the upper end of the induction pipe; the leather disk *t*, from the centre of which the valve *n*, is cut, placed on the disk E, and the whole securely combined with each other, by inserting the screw formed in the outer periphery of the lower end of the pump barrel, within the screw thread formed in the inner periphery of the base cup, and turning the pump barrel until the lower end thereof forces the above enumerated parts into the position represented in fig. 2.

BIRDSILL HOLLY.

No. 169.—*Improvement in Feeders for Screw Machines.*

What I claim as my invention, and desire to secure by letters patent, is First. The method, substantially as described, of arranging screw blanks, &c., by the motion of oppositely inclined beveled or curved surfaces, with sufficient space between them to receive freely the shanks of the blanks, whilst they hang suspended by their heads, the said motion of such surfaces being in the direction of the space between them, substantially as described.

Second. Making one of the said inclined beveled or curved surfaces in two parts, one above the other, substantially in the manner and for the purpose specified.

Third. Combining with the said oppositely inclined beveled or curved surfaces, a fence or guard plate, placed across, from the one towards the other, and over the space in which the blanks are suspended, substantially in the manner and for the purpose specified.

Fourth. In combining with oppositely inclined beveled or curved surfaces, revolving arms, wings or beaters, substantially in the manner and for the purpose specified.

And lastly. In combining with the said oppositely inclined beveled or curved surfaces, a checking and delivering apparatus, substantially in the manner and for the purpose specified.

SOLYMAN MERRICK.

No. 170.—*Improvement in Planing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the lever frame B, B, B, B, cam wheel J, and plane stock G, substantially in the manner described, by means of which combination, and the configuration of the cam wheels, substantially as specified, and the plane stock, which is made to move in a different and lower line, during its forward stroke, than during its backward stroke, in the manner and for the purposes described.

Second. The combination and arrangement of the tonguing and grooving planes W and X, running with the slides *y*, *y'*, and the mode of adjusting the same, in combination with the surface plane G, the cam wheels J, and levers B, B, B, B, substantially in the manner specified, for planing, tonguing and grooving boards and plank, at one operation.



And finally. The mode of contracting and expanding the grated bed, in the manner specified, in combination with the tonguing and grooving planes.

CALVIN EMMONS.

No. 171.—*Improvement in the Machine for Boiling and Washing rags for Manufacturing Paper.*

What is claimed, is the herein before described process of preparing materials for making pulp in the manufacture of paper, by digesting them in a turning vessel with an alkaline solution or other liquid, the heat being applied to the outside of the vessel, or by steam introduced within it, substantially as herein set forth.

JOHN CAMPBELL,

*Assignee of the whole right of the late George Spafford.*

No. 172.—*Improved concealed Trigger for Fire-arms.*

What we claim as of our own invention, and which we desire to secure by letters patent, is the construction of a concealed trigger, capable of being disclosed and made ready to operate by simple pressure imparted by the hand to its rear end, as described herein.

JACOB PECARE.

JOSIAH M. SMITH.

No. 173.—*Improvement in Harvesters of Clover Heads and other Grain.*

What I claim as my improvement, and desire to secure by letters patent, is: First. The combination and arrangement of the transverse pendant finger bar I, the mortised right angled plates F, the adjustive slide bars G, and knife or cutter K, with the revolving axle-tree of spring conveyer bars P, arranged and operating in the manner described, by which the heads of clover, wheat, and other description of grain, are severed from the stems or stalks, and delivered into a receiver.

Second. I also claim the combination of the right angled rods L, fingers J, and pendant bar I, with the transverse timber N, for adjusting the knife K, and fingers J, longitudinally and vertically in connection with the spring conveyer bars P, as described and represented.

JOHN HINTON.

No. 174.—*Improvement in Cooking Stoves.*

What I claim therefore, and desire to secure by letters patent, is:

First. The heating chamber in front of the oven, in combination with the arrangement of direct and return flues at the bottom and back of the oven, substantially as described, for the purpose of imparting an equal or nearly equal heat to the oven as described.

And secondly. I claim in combination with the heating chamber in front, and the arrangement of direct and return flues at the bottom and back, substantially as described, the extension of the oven under the open hearth or apron of the stove, substantially as described, whereby the capacity of the oven is increased, relatively to the other parts of the stove, and at the same time heated equally or nearly so, as described.

DARIUS BUCK.

No. 175.—*Improvement in the manner of constructing the Truss Frames of Bridges and other Structures.*

What I claim as my invention, and desire to secure by letters patent, in the construction of truss frames, is the method of uniting the upper and lower



stringers without attaching them to the interposed timbers by the combination of the straining blocks, with the timbers interposed for keeping the stringers apart, and the tension rods for drawing them together, substantially as described, whereby the camber can be regulated with facility along the whole or any portion of truss, as described.

WM. HOWE.

No. 176.—*Improvement in Stoves.*

Having thus fully described my improvements in stove furnaces, &c., what I claim as new therein, and which I desire to secure by letters patent, is the air chamber, in which the air is heated previously to its admission to the fuel in combination with the apertures, by which the heated air is caused to impinge on the upper surface of the fuel, substantially in the manner, and for the purposes as described.

ANSON ATWOOD.

No. 177.—*Improvement in Brick Presses.*

What I claim as my invention, and desire to secure by letters patent, is the making the moulds C, C, of extra depth, in combination with the elevation of the bricks in the moulds, after they have been pressed a distance equal to the extra depth given to the same, and there moval of the surplus thickness of the bricks, raised above the tops of the moulds, by a knife or its equivalent, for the purpose of giving uniform solidity and perfection of form to the bricks, prior to their final removal from the moulds, substantially as herein set forth.

ISAAC GREGG.

No. 178.—*Improvement in Printing Presses.*

I claim a platen raised and lowered by machinery, substantially as above described, in combination with the moveable tympan plate on which the sheet of paper is placed, and the bed supporting the type with their faces downwards, the whole being arranged and operating together, substantially in the manner, and for the purpose herein explained and set forth.

I claim supplying the press with paper, and removing the same after it is printed into a box, in fig. 6, attached to the tympan carriage, by means of a vibrating table  $g'$ ,  $h'$ , (operated by a cam  $a'$ , fig. 4, on the shaft I, figs. 4 and 6, in combination with a frisket constructed as above described, connected to the frame  $g$ ,  $g$ , of the tympan plate, and pressed down upon said plate by a spring  $j^2$ ,  $k^2$ , and raised when the tympan carriage recedes with the printed sheet by means of a cam  $o'$ , fig. 2, on the shaft I, through the intervention of a bar  $w'$ , with a roller  $v'$ , shaft  $y'$ , and angular piece of metal  $a^2$ , the whole being arranged and operating together, substantially as herein above explained and set forth.

I claim grooving or channeling the fountain roller or plate under the same, in the manner and for the purpose above mentioned.

I claim the peculiar combination of machinery, for the lateral vibration of the distributing roller; said combination consisting of the pulleys  $v^2$ , on the shaft B, band  $w^2$ , pulleys  $x^2$ , rod  $y^2$ ,  $z^2$ , lever  $a^3$ ,  $b^3$ ,  $c^3$ , rod  $e^3$ ,  $f^3$ , shaft  $g^3$ , and distributing roller frame  $o^2$ , the whole being arranged and operating together, substantially in the manner and for the purpose above mentioned.

I claim the use of the side strips  $c^2$ ,  $d^2$ ,  $c^2$ ,  $d^2$ , and cross strips  $e^2$ ,  $f^2$ , or either of them, in combination with a tympan supported by the platen plate, the said combination forming a pair of nippers, as it were for rigidly holding



the sheet, however small the margin may be, until it is effectually free, or disengaged from the form after an impression is produced.

STEPHEN P. RUGGLES.

No. 179.—*Improvement in Shanks of Door Knobs.*

What we claim as our invention, and desire to secure by letters patent, is the method of making the shank for door knobs in two pieces, coupled together near the middle by a notched connection, and held together by means of the escutcheon at one end, and the latch bolt B, (or by the tumbler B', that operates a latch bolt) at the other, substantially as herein described.

We also claim the constructing the keeper H, and the lever fastener J, of such shape and proportions, that the keeper can be reversed in its position upon the latch plate A, and the lever fastener be reversed in its position in relation to the keeper, for the purpose of adapting our improved locks or latch to doors, opening either to the right or to the left, substantially as herein set forth.

We also claim the connecting the respective shanks of the knobs to each other, and to the lock or latch, by means of the tooth in the halved portion of one shank, fitting into an aperture in the halved portion of the other, and the two being confined to each other by the tumbler i, the tube F, projecting from the side of the lock or latch, and the escutcheon E, secured to the door, substantially in the manner herein set forth.

L. R. LIVINGSTON.

JOHN JAY ROGGEN.

CALVIN ADAMS.

No. 180.—*Improvement in Mills for Grinding.*

Having thus described the construction and operation of our bark mill, what we claim therein as our invention, and desire to secure by letters patent, is the vibratory motion given to the concave, substantially in the manner herein set forth.

SIDNEY A. BANTZ.

WILLIAM ANDREW.

No. 181.—*Improvement in Portable Furnaces.*

I claim as my invention, the construction of a portable furnace, by which it may be connected with a stove, in the manner described, that is, a furnace adapted to the boiler, or other hole of a stove, with a downward draft, or diving flue for the escape of the smoke, through the bottom into the stove, substantially in the manner and for the purposes set forth.

MERRITT F. POTTER.

No. 182.—*Improvements in Machinery for turning Irregular Forms.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the cutter wheel or saws, so as to cut in the direction of the grain of the wood or other substance to be formed, when this is combined with the rotation of the pattern, and substance to be formed during the operation of the cutters, substantially as described.

I also claim the rotating cutter wheel, constructed substantially as herein described, of a series of circular saws, secured in an inclined position to an arbor which carries them, as herein set forth.

TIMOTHY CLARK.



No. 183.—*Improvement in the manner of constructing Railroad Carriages, so as to ease the lateral motion of the bodies thereof.*

What we claim, is connecting the said turning bearing to the truck frame of the above described kind, resting on four wheels or more, by a mechanism, substantially such as described, that shall not only allow such turning bearing independently of the wheels and axles, a lateral play movement or movements, in directions transversely of the carriage, but bring or move it back to its central position after the lateral deflective force has ceased to act.

CHARLES DAVENPORT.

ALBERT BRIDGES.

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### ADDITIONAL IMPROVEMENTS.

No. 93.—*Improvement in Ice Cream Freezers.*

What I claim, and desire to secure by this additional improvement, is first, the spring blade or scraper, constructed and employed as above described.

H. B. MASSER.

No. 94.—*Improvement in separating Stearine from Elaine.*

What I claim as my additional improvement and desire to secure by letters patent, is the application of alcohol, as herein described, for the purpose of making candles.

JOHN H. SMITH.

No. 95.—*Improvement in Tailors' Measures.*

What I claim in these letters patent, additional, is the combination of the socket and rule, figs. 6, 7, with the instrument represented, at fig. 2, also the socket in the arms 6, 7, as represented, also the manner of connecting two instruments together, by bar P, P, as represented on fig. 10, for the purpose of ascertaining the slope of both shoulders at one operation, also the additional width of the lower arm, and the combination of the groove and slide R, S, and rule X, with the lower arm as represented at 0, 8, as set forth.

AMOS STOCKER.

No. 96.—*Improvements in Apparatus for Splitting and Stretching Leather.*

I claim the improvement of the apparatus for splitting and stretching leather, secured to me by letters patent, in April 1850, by adding thereto an additional apparatus for stretching leather, especially belting, said apparatus consisting of the combination of two rods, placed one above the other, in juxtaposition, the upper rod maintaining two clamps to hold the leather to be operated on, the one clamp fixed to one end of the rod, the other clamp moveable along the rod. The said rod being separable from the machine with the leather, after the same has been stretched, for the purpose of allowing the repetition of the stretching operations, with another similar rod, and another piece of leather.

The under rod to be a permanent attachment to the machine, but moveable along its own length, by the wheel work of the machine, or otherwise, so that when the upper rod is temporarily secured to it by one end near the fixed clamp, and the other clamp is held in its position, the two clamps may be gradually separated, stretching the leather lying between them, substantially as set forth in the above specification.

BRADFORD ROWE.



## DESIGNS.

No. 258.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of ornamental forms and figures, represented in the accompanying drawings, forming an ornamental design for a cooking stove.

H. L. SHEPERD.

No. 259.—*Design for Stoves.*

What I claim as my new design, and desire to secure by letters patent, is the design and configuration of a cook stove, substantially the same as described and represented in the annexed drawings.

P. J. SIMMONS.

No. 260.—*Design for Stoves.*

What we claim as new, and our invention, and desire to secure by letters patent, is the combination and arrangement of the above described and represented panelings, ornaments, mouldings, &c., into an ornamental design for cooking stoves, when constructed, combined, and arranged, substantially as herein specified and represented.

JOSEPH G. LAMB.

CONRAD HARRIS.

No. 261.—*Design for Stoves.*

We have thus described the ornamental design which we claim as our invention, or production, and desire to secure by letters patent, the design for a stove, called the cottage parlor air tight, herein fully described and represented in the accompanying drawings.

WM. P. CRESSON.

DAVID STUART.

PETER SEIBERT.

No. 262.—*Design for Stoves.*

We have thus described the ornamental design, which we claim as our invention, or production, and desire to secure by letters patent, the design for a stove, called a radiator screen, herein fully described and represented in the accompanying drawings.

WM. P. CRESSON.

DAVID STUART.

PETER SEIBERT.

No. 263.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of ornamental figures, forming respectively the front and side plates of my stove, as herein represented and described.

SAMUEL D. VOSE.

No. 264.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of ornamental figures forming respectively the outside plates of my parlor stove, as herein represented and described.

SAM'L D. VOSE.



No. 265.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of ornamental figures, forming respectively the front, top and side plates of my stove, as herein represented and described.

SAM'L D. VOSE.

No. 266.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the production of the new design for stoves, as described in this specification, and represented in the drawings hereto annexed at figures 1 and 2.

JAMES H. CONKLIN.

No. 267.—*Design for Stoves.*

What we claim as our invention, and desire to secure by letters patent, is the configuration and arrangement of the ornamental figures on the door panels and feet of the stove, constituting together, a design for a stove.

J. D. GREEN.

GEO. WARREN.

No. 268.—*Design for Stoves.*

I do not claim the figures in this plate fig. 1, as being new; but what I do claim as my invention, and desire to secure by letters patent, is the peculiar form, shape, or configuration of the said stove plate, fig. 1, to be used as the front oven plate to an elevated oven, such shape, form, or configuration being a design, independent of any particular ornaments.

LATHROP S. BACON.

No. 269.—*Design for Stoves.*

What I claim as new, and desire to secure by letters patent, is the design and configuration of ornaments constituting a parlor stove, substantially the same as herein described and represented.

WM. L. SANDERSON.

No. 270.—*Design for Stoves.*

We have thus described the ornamental design which we claim as our invention or production, and desire to secure by letters patent, the design for a stove called a cast iron parlor air tight, herein fully described and represented in the accompanying drawings.

WM. P. CRESSON.

DAVID STUART.

PETER SEIBERT.

No. 271.—*Design for Stoves.*

We have thus described the ornamental design which we claim as our invention or production, and desire to secure by letters patent, the design for a stove called air tight parlor, herein fully described and represented in the accompanying drawings.

WM. P. CRESSON.

DAVID STUART.

PETER SEIBERT.



No. 272.—*Design for Stoves.*

What I claim as original, and desire to secure by letters patent, is the arrangement and combination of the several original ornamental figures, letters and mouldings upon this particular stove, as herein described and represented by the annexed drawings.

JAMES H. CONKLIN.

No. 273.—*Design for Chandeliers.*

We claim the ornamental design for a chandelier, set forth in the accompanying drawing, as our original design.

ELLIS S. ARCHER.

REDWOOD F. WARNER.

No. 274.—*Design for Stoves.*

What I claim as my new design, and desire to secure by letters patent, is the design and configuration of the ornaments, so disposed on the doors, feet, and other parts of the stove, constituting, in combination, a new design of cook stove, the same as herein described and represented.

SAMUEL A. HOUSE.

No. 275.—*Design for Stoves.*

We have thus described the ornamental design which we claim as our invention or production, and desire to secure by letters patent, the design for a stove, called a complete cook, herein fully described and represented in the accompanying drawings.

RICHARD PETERSON.

DAVID STUART.

PETER SEIBERT.

No. 276.—*Design for a Portable Furnace.*

What we claim, and desire to secure by letters patent, is the above described ornament and illuminated design for portable furnaces.

CHAS. W. WARNICK.

FRED'K LEIBRANDT.

JAS. G. ABBOTT.

ARCHILUS LAWRENCE.

No. 277.—*Design for Stoves.*

I claim as my invention or production, the above described combination of mouldings and illustrated ornamental figures for six plate stoves, and desire to secure the same by letters patent.

JAMES WAGER.

No. 278.—*Design for Stoves.*

I claim the foregoing described and illustrated design for stoves.

DAVID L. BARTLETT.

No. 279.—*Design for Stoves.*

What I claim as my new design, and desire to secure by letters patent, is the design and configuration of the ornaments, so disposed on the doors, feet, and other parts of the stove, constituting, in combination, a new design of stove, substantially the same as herein described and represented.

JOSHUA CRANDALL.



No. 280.—*Design for Cooking Stoves.*

What we claim as our new design, and desire to secure by letters patent, is the design and configuration of ornaments in the panels of the doors, and on the feet, so as to constitute, in combination, a new design of cooking stove, as herein described and represented.

J. D. GREEN.

GEO. WARREN.

No. 281.—*Design for Stoves.*

Having thus described the nature of my new design, what I claim therein as new, and desire to secure by letters patent, is the design of ornament and configuration, constituting, in combination, a new design of stove, substantially the same as herein described and represented in the annexed drawings.

P. A. PALMER.

No. 282.—*Design for Painted Floor Cloth.*

And what is claimed as my invention, and desired to be secured by letters patent of the United States, is the arrangement of ornamental figures, forming a design for floor cloths, as shown in the aforesaid drawing.

JAMES HUTCHINSON.

No. 283.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental shape and configuration, of the respective pieces of castings for a stove, as represented in the accompanying drawings, and herein specified.

WASHBURN RACE.

No. 284.—*Design for Stoves.*

Having thus fully described and illustrated my design for cooking stoves, what I claim as new, and for which I desire to obtain letters patent, is the particular form and design, as herein described and illustrated.

D. ROOT.

No. 285.—*Design for Stoves.*

What I claim as my invention in the said design, and desire to have secured to me by letters patent, is the combination of the elongated horizontal panels *i, i, i,—k, k, k*, and vertical connecting panel *n, n, n*, all having mouldings in alto relievo, with the several doors and panels, having gothic arches with clustered raised ribs on their sides, and mouldings as above specified and shown in the drawings.

A. C. BROWNELL.

No. 286.—*Design for Stoves.*

What we claim as our invention, and desire to secure by letters patent, is the design of the form of the plates consisting of the peculiar manner, the same are ornamented and constructed; we lay no claim to the general form of the stove.

JOEL C. BAILEY.

RUSSEL WHEELER.

No. 287.—*Design for Umbrella Stands.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design for an umbrella stand, herein above described, con-



sisting of branches of a grape or rustic vine, cast in a twisted form about the basin, and then rising vertically and crossing each other, to form the stem, from which other branches project horizontally, and are twined so as to form the loop-holes *g, g,—g, g, &c.*, all as above set forth and represented, in the accompanying plate of drawings.

WALTER BRYANT.

No. 288.—*Design for Coal Stoves.*

Having thus described and represented my new design, what I claim as new and desire to secure by letters patent, is the ornamental design and configuration of stoves, substantially the same as herein described and represented.

JOHN T. DAVY.

No. 289.—*Design for Stoves.*

What I claim as my invention or production, and desire to have secured to me by letters patent, is the combination of the bull's eyes, in alto relievo, (having radial notches as described,) and of alternating concave and convex radial ribs, and surrounding mouldings, on the several doors and panels of the front and side plates, and the row of pointed leaves *m, m*, and of alternate notches and ridges *n, o, &c.*, on the moulding of the hearth plate, all as herein above set forth and represented in the drawings.

AMOS PAUL.

No. 290.—*Design for Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination of the four ornamental figures, (as represented,) in the accompanying drawings.

ELIJAH P. PENNIMAN.

No. 291.—*Design for Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together an ornamental design for a parlor stove.

JOHN F. RATHBONE.

No. 292.—*Design for Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together an ornamental design for a cooking stove.

JOHN F. RATHBONE.

No. 293.—*Design for Stoves.*

Having thus fully described our improvement, what we claim therein as new, and for which we desire to secure letters patent, is the above described ornamental design and configuration of the plates, as described and represented.

JAMES WAGER.

DAVID PRATT.

VOLNEY RICHMOND.

No. 294.—*Design for Stoves.*

Having thus fully and exactly described the ornaments of our stove, what we claim therein as new, and desire to secure by letters patent, is the com-



bined ornamental design, and configuration of plates, for a cooking stove, substantially as herein set forth and represented in the accompanying drawings.

J. E. OWENS.

JACOB EBERT.

E. G. DYER.

No. 295.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the design of the top and bottom stove plates, represented in the accompanying drawings, and herein set forth.

WASHBURN RACE.

No. 296.—*Design for Cooking Stoves.*

What I claim, and desire to secure by letters patent, is the design and configuration of cook stove, as herein described and represented in the annexed drawing.

WM. L. SANDERSON.

No. 297.—*Design for Stoves.*

What I claim, and desire to secure by letters patent, is the design of cook stove, represented in the annexed drawings.

JOSHUA CRANDALL.

No. 298.—*Design for Stoves.*

What I claim as my production, and desire to have secured to me by letters patent, is the ornamental design, herein above described, for the front and back plates of a horizontal cylindroidal air tight stove, and the door of the former consisting of scollop shells, and razor shells, cast in alto relievo in the several positions on said plates, herein above specified, and represented in the drawings.

CALVIN DOANE.

No. 299.—*Design for Lamps.*

We claim the ornamental design of the column or pedestal, the oil cup and the border round the globe holder, set forth in the accompanying drawing as our original design.

REDWOOD F. WARNER.

ELLIS S. ARCHER.

No. 300.—*Design for Stoves.*

What we claim as our invention, and desire to secure by letters patent, is the shape and configuration of the ornamental plates for stoves herein described.

SHERMAN S. JEWETT.

FRANCIS H. ROOT.

No. 301.—*Design for Stoves.*

What I claim as my invention or production, and desire to have secured to me by letters patent, is ornamenting the several mouldings of the top and bottom of a pyramid stove, and the double doors resting on the latter with transverse, longitudinal, and clustered beak-heads cast in alto relievo, as herein above described and represented in the drawings.

APOLLOS RICHMOND.



No. 302.—*Design for Stoves.*

We claim as our invention, and desire to secure by letters patent, the above design which is fully set forth in the drawings accompanying this description.

JAMES H. CONKLIN.

A. W. JONES.

No. 303.—*Design for Stoves.*

Having thus fully and exactly described the ornaments of my stove, what I claim therein as new, and desire to secure by letters patent, is the combined ornamental, design and configuration of plates for a cooking stove, substantially as herein set forth and represented in the accompanying drawings.

J. E. OWENS.

JACOB EBERT.

E. G. DYER.

No. 304.—*Design for Portable Grate.*

What I claim as my invention or production, and desire to have secured to me by letters patent, is the new design herein above described, for the front plate of a portable grate, consisting of the five centred arch mouldings, supported by the triple column pilasters, in combination with the gothic panels on each side of said pilaster, and three sided panels on the horizontal part of the frame; said three sided panels, and the space beneath the arch moulding being filled with the wedge shaped radial ribs, all as herein above described.

AMOS PAUL.

No. 305.—*Design for Cast Iron Brackets.*

What I claim as my invention or production, and desire to have secured to me by letters patent, is the combination of the central Grecian scroll, with its pendent leaves, with the several smaller Grecian scrolls and fluted ties, herein above enumerated and represented in the drawings, the whole forming a connection between the vertical and horizontal plates of a cast iron bracket.

WALTER BRYANT

No. 306.—*Design for Coal Stoves.*

What I claim as my invention and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together an ornamental design for a coal cylinder stove.

JNO. F. RATHBONE.

No. 307.—*Design for Stoves.*

What I claim as my invention and desire to have secured by letters patent, is the combinations of leaves, vines, curves, and other ornaments, as represented in the annexed drawings, and herein described as a design for cast iron stove plates, making part of a cast iron stove.

R. J. BLANCHARD.

No. 308.—*Design for Stoves.*

What we claim as our invention, and desire to secure by letters patent, is the shape and configuration of the ornamental plates for stoves, herein described.

SHERMAN S. JEWETT.

F. H. ROOT.



No. 309.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental design for stove plates, as herein described, and which is fully set forth in the drawing accompanying this description.

ROBERT DONAVAN.

No. 310.—*Design for a Parlor Stove.*

What I claim as new, and desire to secure by letters patent, is the design and configuration of ornamental stove plates, substantially the same as described and represented in the annexed drawings.

GEORGE W. RING.

No. 311.—*Design for a Stove.*

Having thus described my design, what I claim as new, and desire to secure by letters patent, is the design and configuration of ornamental stove plates, substantially the same as herein described and represented.

WM. L. SANDERSON.

No. 312.—*Design for Stoves.*

Your petitioner claims to be the original inventor or producer of the design and ornamental part of said stove, as above described and represented in the drawings.

CHARL. W. WARNICK.

No. 313.—*Design for Bust of Daniel Webster.*

What I claim as my invention or production, is the design of a bust of Daniel Webster, as represented in the annexed drawings.

JOHN C. KING.

No. 314.—*Design for a Blower Stand.*

Having thus described my new design for a blower stand, I shall state my claim as follows:—What I claim as my invention or production, and desire to have secured to me by letters patent, is the new design herein above described for a blower stand, consisting in forming two halves of said stand in the form of an ancient lyre frame, ornamented with volute scrolls, as herein above set forth and as represented in the drawings.

WALTER BRYANT.

No. 315.—*Design for Plates for Registers, Ventilators, &c.*

What we claim and desire to secure by letters patent, is the particular configuration or design of open scroll or fret work, substantially as described by the annexed drawing, and alluded to in the foregoing specifications. The said design is used by us as a top or front plate of hot air registers and ventilators, and for other useful and ornamental purposes.

CHARLES F. TUTTLE.

JAMES S. BAILEY.

No. 316.—*Design for Plates for Registers, Ventilators, &c.*

What we claim and desire to secure by letters patent, is the particular configuration or design of open scroll or fret work, substantially as described by



the annexed drawing, and alluded to in the foregoing specifications The said design is used by us as a top or front plate of hot air registers and ventilators, and for other useful and ornamental purposes.

CHARLES F. TUTTLE.

JAMES S. BAILEY.

No. 317.—*Design for Plates for Registers, Ventilators, &c.*

What we claim, and desire to secure by letters patent, is the particular configuration or design of open scroll or fret work, substantially as described by the annexed drawing, and alluded to in the foregoing specifications; the said design is used by us as a top or front plate of hot air registers and ventilators, and for other useful and ornamental purposes.

CHARLES F. TUTTLE.

JAMES S. BAILEY.

No. 318.—*Design for Plates for Registers, Ventilators, &c.*

What we claim, and desire to secure by letters patent, is the particular configuration or design of open scroll or fret work, substantially as described by the annexed drawings, and alluded to in the foregoing specification; the said design is used by us as a top or front plate of hot air registers and ventilators, and for other useful and ornamental purposes.

CHARLES F. TUTTLE.

JAMES S. BAILEY.

No. 319.—*Design for Plates for Registers, Ventilators, &c.*

What we claim, and desire to secure by letters patent, is the particular configuration or design of open scroll or fret work, substantially as described by the annexed drawing, and alluded to in the foregoing specifications; the said design is used by us as the top or front plate of hot air registers and ventilators, and for other useful and ornamental purposes.

CHARLES F. TUTTLE.

JAMES S. BAILEY.

No. 320.—*Design for Plates for Registers, Ventilators, &c.*

What we claim, and desire to secure by letters patent, is the particular configuration or design of open scroll or fret work, substantially as described by the annexed drawing, and alluded to in the foregoing specifications; the said design is used by us as the top or front plate of hot air registers and ventilators, and for other useful and ornamental purposes.

CHARLES F. TUTTLE.

JAMES S. BAILEY.

No. 321.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the design and ornaments, consisting of cornucopias, and fruits issuing from them, and of vines and leaves issuing from scrolls, as they are delineated in the accompanying drawings, and herein described: I do not claim the open spaces in figure 1, nor is it any part of my invention that there is some open work in figure 3; but I claim the ornaments seen in figure 3, whether the same are made in open work, or in relief.

R. J. BLANCHARD.



No. 322.—*Design for Stoves.*

What I claim as new, and my invention, is the combination and arrangement of the above described and represented shapes, figures, ornaments, flutes and mouldings, into the above represented style and design for coal heating stoves, substantially as above shown.

JOSEPH G. LAMB.

No. 323.—*Design for Stoves.*

What I claim as new, and my invention, is the combination and arrangement of the above represented and described mouldings, shapes, figures and ornaments, into the above represented design for cooking stoves, substantially as above shown.

JOSEPH G. LAMB.

No. 324.—*Design for Stoves.*

Now what I desire to secure by letters patent of the United States, and what I claim as original, is the peculiar combination and arrangement of the several ornamental figures and mouldings forming the original design of this stove, as described in this specification, and as represented by the accompanying drawings.

WM. SAVERY.

No. 325.—*Design for Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together, an ornamental design for a parlor stove.

A. W. JONES.

No. 326.—*Design for Grate Frame and Fender.*

What I claim as my production herein, and desire to secure by letters patent, is the combination and general arrangement of the figures and ornaments, as set forth, and shown in the drawings herein described, for forming an ornamental grate frame, summer piece and fender, substantially as described.

JAMES L. JACKSON.

No. 327.—*Design for Stoves.*

Having thus described and represented my new design of stove plates and register door, what I claim as new, and desire to secure by letters patent, is the design of ornament, shape, and configuration of parlor stove plates, as described and represented in the annexed drawing.

EZRA RIPLEY.

No. 328.—*Design for Stoves.*

What I claim and desire to secure by letters patent, is the design and configuration of ornamental parlor stove plates, substantially the same as described and represented.

EZRA RIPLEY.

No. 329.—*Design for Stoves.*

What I claim as my invention, is the ornamental composition of each foot E or F.

I also claim the ornamental composition of either the base, the cornice, or the blockings, as well as a combination of the whole of the same.



I also claim the ornamental composition or design for the main oven door H, as well as that of either of the small doors I or K.

LABEN EDDY.

No. 330.—*Design for Iron Railings.*

What I claim, is the particular ornamental design or device for a railing and gate posts, as herein combined and specified; that is, the posts, panel, and marginal grape vine base, in form and design, substantially as herein set forth.

WILLIAM BALLARD.

No. 331.—*Design for Bas Relief of Henry Clay.*

What I claim as my design, and wish to secure by letters patent, is the combination of scroll work and vignette, which forms the ornamental tablet, the shield on which history is recording the extract of Mr. Clay's address, together with the side view attitude in which he is represented, and the ornamental tablet on which he stands, from which copies may be taken, for sale or use: either by casting, moulding, embossing, or in any manner, or with any material whatsoever, in bas-relievo, or by copies to be taken by painting, drawing, sketching, etching, engraving on wood or metal, or by any material spread upon it, or by the electrotpe, talbotype, or daguerreotype process, or by ruling with machinery, or in any other manner whatsoever.

CHARLES YOUNGLOVE HAYNES.

No. 332.—*Design for Stoves.*

I do not claim the mouldings around the door, as seen in fig. 1, but what I do claim as my invention, and desire to secure by letters patent, is the bunch of leaves tied together, as seen in fig. 1, and the leaf ornament in fig. 2, as such a design as above mentioned.

R. J. BLANCHARD.

No. 333.—*Design for Stoves.*

What I claim as my invention or production, and desire to have secured to me by letters patent, is the combination of the several ornamented parts of the stove, viz: the base plate or hearth, having the diamonds and clustered beak heads cast thereon, as described, the side and back plates having a plinth with semi-pyramidal ribs, gothic arches, diamonds, beak heads, and band at top, with inverted semi-pyramidal beak heads, the cap, with its circular ornamented areas,  $n'$ ,  $n'$ , and diamonds surrounding beak heads  $m'$ ,  $m'$ , and the vase, with its exterior ornaments of diamonds, clustered beak heads, semi-pyramidal ribs and open work diamonds, all the mouldings, beak heads, and ribs being cast in alto-relievo, as herein above described and represented in the drawings, the whole combination forming an entirely new design for the exterior of a parlor air tight stove.

APOLLOS RICHMOND.

No. 334.—*Design for Stoves.*

What I claim as new, and which I desire to secure by letters patent, is the design formed and ornamented, substantially as above described and represented in the accompanying drawings.

D. ROOT.

No. 335.—*Design for Carriage Plates.*

What I claim as my invention, and desire to secure by letters patent, is



my design for an ornamental carriage plate for the side of a wagon body, substantially in the manner herein set forth.

JOHN S. ROYCE.

No. 336.—*Design for Spool Handles.*

What we claim as our invention, is the new and useful ornamental design or configuration, substantially as represented in figure 1, and as herein before described.

CHARLES P. GORDEN.

GEORGE B. GORDEN.

No. 337.—*Design for Stoves.*

I claim the ornamental design or combination of the star *a*, the fillet *c*, the system of rays *b*, the six torus arcs *d*, *e*, *f*, *g*, *h*, *i*, and two straight connecting toruses *k*, *l*, disposed essentially as specified.

WILLIAM B. GLEASON.

No. 338.—*Design for Stoves.*

What I claim as new, and desire to secure by letters patent, is the design of ornament and configuration of cook stoves, substantially the same as herein described and represented.

SAMUEL PIERCE.

No. 339.—*Design for Stoves.*

Having thus described the nature of our new design, what we claim therein as new, and desire to secure by letters patent, is the design of ornament and configuration, constituting, in construction, a new design of stove, substantially the same as herein described and represented in the annexed drawings.

MORRIS SMITH.

No. 340.—*Design for Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms represented in the accompanying drawing, as making an ornamental design for an air tight cooking stove.

CHAS. A. LAMBARD.

No. 341.—*Design for a Cook Stove.*

What I claim herein as new and for which I desire letters patent, is the ornamental design for a stove, substantially as represented in the accompanying drawings.

W. C. DAVIS.

No. 342.—*Design for Stoves.*

What we claim as our invention or production, and desire to secure by letters patent, is the ornamental design, as above described and represented in the accompanying drawings.

CHAS. GILBERT.

W. G. HALLMAN.

No. 343.—*Design for Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together, an ornamental design for a parlor stove.

ELIHU SMITH.



No. 344.—*Design for Stoves.*

What I claim as new, and my invention, is the arrangement and combination of the above described and represented shapes, figures, ornaments, flutes and mouldings, into the above specified design for coal heating stoves, substantially as above shown.

JOSEPH G. LAMB.

No. 345.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental design for a stove, as herein described and represented in the annexed drawing.

S. W. GIBBS.

No. 346.—*Design for Cooking Stoves.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms represented in the annexed drawings, as making an ornamental design for a cooking stove.

S. W. GIBBS.

## DISCLAIMERS ENTERED DURING THE YEAR 1850.

*Turn-about for Railroads.*

Your petitioner, therefore, hereby enters his disclaimer to that part of the claim in the aforementioned specification, which is in the following words, to wit: "a revolving circular platform, or turning table, is not claimed, but only the method of turning it, by the use or application of a circular rack and pinion, turned by a crank," which disclaimer is to operate to the extent of the whole interest in said letters patent, your petitioner being the sole proprietor thereof.

JEREMIAH MYERS.

*Improved Frog for Railroads.*

Your petitioner, therefore, hereby enters his disclaimer to that part of the claim in the aforesaid specification, which is in the following words, to wit: "What I claim as my invention, and desire to secure by letters patent, is a railroad frog, constructed with hinged leaves, acted upon by either weights or springs." I desire to limit and restrict this said claim, so that it will only cover and protect the attachment of the said "weights or springs" to that part of the said "hinged leaves" of a railroad frog, at or near the angles of the same, or the point of the V of the frog, and the hinged ends of the said leaves, which disclaimer is to operate to the extent of the interest in said letters patent, vested in your petitioner.

HENRY A. LANDRY.

*Turning Wooden Bowls, Machinery for.*

Your petitioner, therefore, hereby enters his disclaimer to that part of the claim in the aforementioned specification, which is in the following words: "the combination of the semicircular arm E, with the knife frame F, holding one or more knives, and adjustable piece J, holding the gouge T, for the purpose of turning wood bowls or dishes," which disclaimer is to operate to the extent of the interest in said letters patent, vested in your petitioner.

ADDISON EVERETT.



## RENEWAL.

No. 24.—*Improvement in Capstans.*

The invention here claimed, and desired to be secured by letters patent, is the improvement of the ships or vessels' capstans, so that increased power may be obtained at pleasure, as above described; with the arrangement, application, and adaptation of the several parts, as herein set forth.

ANDREW MORSE, JR.



## III.

## EXAMINERS' AND MACHINIST'S REPORTS.

Honorable THOMAS EWBANK,

*Commissioner of Patents.*

SIR :—I have the honor to report from my desk, the following facts and observations for the year 1850. At the commencement of the year I had before me 9 applications unexamined. During the year, 559 new applications have been apportioned to me for examination, and I have now before me, 68 new applications untouched. Examination has therefore been had upon 500 new applications. Of these applications, adverse reports were made upon 175. Favorable reports have been made upon 314 applications, old and new, for which letters patent were ordered to issue. Of the 314 ordered to issue, 83 issues were for designs, and of the 175 adverse reports, 17 were upon designs; by which it will be seen that the proportion of adverse reports upon designs, is small. The whole number of adverse reports upon all cases, old and new, coming up for examination in 1850, was 267. It will be borne in mind that adverse reports are often repeated two, three, four or more times upon applications for reconsideration of the same case, and as often confirmed by your decision. The whole number of reports and actions upon applications, old and new, during the year 1850, is 1317. The whole number for 1849, was 1296. The number of cases of interfering applications, reported for 1850, is 17, of which number, 16 were declared and decided during the year.

It is my duty to state here, that the examining force of the office is insufficient, notwithstanding the increase in the number of examiners in 1848. That increase was barely sufficient at the time it was made, and the great increase since, in the number of applications, "calls loudly for help." Permit me here to call your special attention to the following consideration, viz: A numerical statement of the number of cases received or acted upon, cannot be taken as an accurate basis for estimating the amount of work required or performed; and further, that the labor required, increases in a greater ratio than the number of applications. It would be exceedingly difficult to establish the ratio of this increase, as the whole matter is very complicated. But certain facts as criterions, may be clearly stated, although no one but an examiner can fully appreciate the character or extent of his labors. One thing is certain; an examiner's work is never finished. If not a single new application should be presented to the office for the next year, each examiner would still have a full year's work to perform. This may appear a little paradoxical, but the position is fully borne out by the following facts. In addition to the number of applications remaining untouched upon the examiner's desks, there are 1895 applications still before the office, not yet finally decided, and liable



to be called up for action at any time. Upon 1196 of these, unfavorable reports and decisions have been made, but they still await the further intentions of the applicants. Upon 673, the action of the office has been only preliminary, the cases being, for the most part, postponed for the amendment of defects. The remaining 26 are cases of interference not yet decided. The number of applications received by me in 1849, was 481, and 559 in 1850. Applications for letters patent are distributed under the following classification,

#### LIST OF CLASSES.

- Class 1.—Agriculture, including instruments and operations.
- Class 2.—Metallurgy and manufacture of metals, and instruments therefor.
- Class 3.—Manufacture of fibrous and textile substances, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.
- Class 4.—Chemical processes, manufactures and compounds, including medicine, dying, color making, distilling, soap and candle making, mortars, cements, &c.
- Class 5.—Calorific, comprising lamps, fire-places, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.
- Class 6.—Steam and gas engines, including boilers and furnaces therefor, and parts thereof.
- Class 7.—Navigation and maritime implements, comprising all vessels for conveyance on water, their construction, rigging and propulsion, diving dresses, life-preservers, &c.
- Class 8.—Mathematical, philosophical and optical instruments, including clocks, chronometers, &c.
- Class 9.—Civil engineering and architecture, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.
- Class 10.—Land conveyances, comprising carriages, cars and other vehicles, used on roads, and parts thereof.
- Class 11.—Hydraulics and pneumatics, including water-wheels, wind-mills, and other implements operated on by air and water, or employed in raising and delivering fluids.
- Class 12.—Lever, screw and other mechanical powers, as applied to pressing, weighing, raising, and moving weights.
- Class 13.—Grinding-mills and mill gearing, containing grain mills, mechanical movements, and horse powers.
- Class 14.—Lumber, including machines and tools for preparing and manufacturing; such as sawing, planing mortising, shingle and stave, carpenters and coopers' implements, &c.
- Class 15.—Stone and clay manufactures, including machines for pottery, glass making, brick making, dressing and preparing stone, cements and other building materials.
- Class 16.—Leather, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.
- Class 17.—Household furniture, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather dressing, &c.
- Class 18.—Arts—polite, fine and ornamental, including music, painting, sculpture, engravings, books, printing, binding, jewelry, &c.
- Class 19.—Fire-arms and implements of war, and parts thereof, including the manufacture of shot and gunpowder.



Class 20.—Surgical and medical instruments, including trusses, dental instruments, bathing apparatus, &c.

Class 21.—Wearing apparel, articles for the toilet, &c., including instruments for manufacturing.

Class 22.—Miscellaneous.

Class 23.—Designs.

Of these 23 classes, 8 are assigned to my charge, viz:—Classes 5, 8, 12, 15, 16, 18, 20, 23. Under class 5, the applications have been very numerous, and principally for stoves, in which there has been the usual dearth of interest as regards any new principles or developments. An improvement in the candlestick has been patented, consisting of an eccentric ring around the candle holder, by turning which, pressure is made upon the candle, and holds it firmly in place, dispensing with the usual awkward mode of wrapping or packing the candle. Some improvements have been patented in the tubes for “*spirit gas*” lamps, for the purpose of preventing accidents, which not unfrequently arise from attempts to fill these lamps while they are burning. By one of these improvements, the lamp is necessarily extinguished before it can be filled. The unscrewing of the cap forces a slide up over the wick, and puts out the flame. There are few subjects of practical moment so interesting to the community at this time, as that of artificial light. The *camphine* or *pine oil*, and the *spirit gas* or *ethereal oil*, have to some extent superseded the common oils, but the great number of fatal accidents resulting from their use will prevent their general introduction. Another drawback is also and most justly operating to exclude them from use, and that is, the adulteration of the liquid. The pine oil or camphine, is or should be a pure oil of turpentine, but is now so frequently loaded with the spirits of turpentine or resinous matter, as to render it unfit for burning. The spirit gas or ethereal oil is not so easily adulterated, as it requires a very strong alcohol to mix well with the turpentine, but even this article is now so managed as frequently to burn but little better than alcohol itself. The fact is, it is difficult to get a pure article of anything at the present day. A pure sperm oil cannot be purchased; I say this not without authority. A large quantity of sperm and whale oil is now consumed to manufacture the celebrated cod liver oil, which as now sold, is about one-third part cod liver and other fish liver oils, and the remainder fish and whale oil. Lard oil is unfit for lamps, at least so far as we have had any experience in Washington. I have tried repeatedly that which has been the most highly recommended, and have never yet found any that appeared to be suitable, either for single draft or argand lamps. Seeing all the difficulties that beset us in this matter, we may reasonably account for the excitability of the public mind on the subject of artificial light, and the many vain projects that are from time to time put forth, promising a new and cheap light. The galvanic power has been taxed severely, but thus far to no practical account. Two ways of eliciting electrical light have been resorted to. First, by the arc of flame between two carbon points, and secondly by the incandescence of a platinum wire or foil between two electrodes. The arc of flame is subject to great fluctuations from very slight causes, and this is a serious difficulty to overcome. Several very ingenious contrivances have been made for regulating the light, by preserving a uniform distance between the electrodes, but notwithstanding these, the light is irregular. Of all modes of producing intense artificial light, the oxy-hydrogen light is thus far the most successful and economical, but it is not available, except for special purposes. It has lately been announced, that a new light has been invented in France, consisting in ren-



dering a platinum wire cage luminous by a jet of hydrogen. It would seem as if there must be something more than this simple fact to characterize it as a new invention, for the incandescence of platinum wire, foil, and sponge in a jet of hydrogen or spirit lamp has been known for many years.

Under class 8 there have been some very interesting improvements, especially in the matter of telegraphs. Letters patent have been granted for a thermal telegraph, the principal feature of which, is the use of a platinum wire, heated by the current for burning marks upon a fillet of paper. The platinum wire is bent to an acute angle, which touches with its apex, slightly upon the travelling fillet of paper. Each time the current passes in the wire, the heat generated makes a mark upon the paper. A new species of electro-chemical telegraph has been patented, in which marks are made upon a metallic plate, instead of paper. A small glass tube, holding some acidulated solution, rests upon a large metallic disk, and as the disk revolves, the point of the tube, which is slightly perforated, traverses a spiral line in which the marks or impressions conveying the intelligence are to be made. A platinum wire is inserted in the glass tube, and whenever the galvanic circuit is completed through the platinum wire, acid and plate, a black mark is made upon the plate, which is of brass. These marks are strong and well defined, and after the communication is read off, they are easily effaced from the brass disk. The perforation in the point of the tube is sufficiently small to prevent the acidulated water from running out, though sufficient escapes for electrolytic action.

*Electro-magnetic Enunciator.*—An invention with this title has been patented, as a substitute for the usual bell ringing apparatus in hotels and other places. It is, in fact, a species of electro-magnetic indicating telegraph, and ingenious in its construction and mode of operation.

*Electro-magnetic Repeater.*—This invention, but recently patented, is one of considerable novelty and beauty, and is designed for the purpose of repeating or recording a communication in several places at once, along a line of electro-magnetic telegraph, and at the same time allowing the galvanic circuit to remain open when the line is not in use, which is an important condition to be preserved. Another instrument for a similar purpose was patented about the same time, the operation of which requires the circuit to be kept closed.

*Telegraph Manipulator.*—A very ingenious, though complicated machine, for communicating signals in telegraphs where they are recorded in dots and lines. Ordinarily these are made by striking a lever or key with the finger, but by this instrument any combination of dots and lines representing a letter, is at once made and recorded, by simply depressing a key having the desired letter marked upon it. It requires but one motion of the finger, instead of the great number required for some of the letters in the ordinary way. If the machinery is made accurate, it will prevent many mistakes from being made by telegraphic operators.

*Electro-magnetic Engines.*—Two engines of this class have been patented, one of them having for its principal feature, the employment of the secondary current produced by one magnet, to charge an auxiliary magnet. The feature patented in the other engine, is a novelty in the *cut-off*. The cut-off is the contrivance by which the galvanic current is conveyed to, and intercepted from the electro-magnets, and is usually made to operate by the pressure of conducting metallic springs upon metallic disks, either the springs or disks being made to revolve according to circumstances. In the present case, revolving metallic points are brought successively into contact with the surface of a metallic roller, which is pressed against the points by means of a spring.



## FINE ARTS.

*Daguerreotype Plate Holder.*—It has long been an object to obtain some means for holding daguerreotype plates in such a manner while cleaning and polishing them, that the plates should not be handled, and that they should present smooth edges to the buff stick or polishing wheel, and at the same time that the plates, when cleaned and polished, could be readily removed from the plate holder. Various kinds of clamps have been tried, and the plates have been cemented to blocks, &c., but no plan seems to have combined the advantages possessed by the one before us. The edges of the plate are turned down to a right angle or more, by means of a burnisher or other tool specially designed, and the block upon which the plate is secured, is an expansible block, the edges of which press against the turned edges of the plate, and thus hold it in place. The expansion of the block is to be produced by springs, wedges, screws, cams or other means.

*Electrotyping.*—An ingenious device in this art has been patented for preventing the electrotype cast from adhering to the original plate. Many ways have been tried, to obviate this difficulty, but the present is a decided improvement upon them. It consists in acting chemically upon the surface of the copper plate, to so slight an extent as not to injure the impression, nor interfere with the electric deposit. The inventor prefers, in his operations, to iodize slightly the surface of the plate, and then to submit it for some time to the direct rays of the sun.

*Coating Types with Copper by the Electrotype Process.*—A patented invention, and asserted to be one of great practical value. A very slight deposit of copper is put upon the types, which adds greatly to their durability.

*Typographer* is the name of a novel and ingenious machine for printing directly by hand. Several machines for writing and printing by hand, have been patented hitherto, but this seems to exceed them all in rapidity of execution. It is too complicated to describe here, but suffice it to say, that by pressing upon lettered keys, after the manner of playing the piano-forte, the printing is rapidly and neatly executed. A full size and very expensive working model is deposited in the office.

Respectfully submitted,

CHAS. G. PAGE,

*Examiner.*

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SIR:—In compliance with your request, I have the honor to submit the following report of the condition of business at my desk, and of its progress during the past year.

The number of applications referred to me within the year is five hundred and twenty-two. You will recollect, however, that an unusually large number of cases were examined by me in 1849, and as actions on them were not all of a final character, many of them were at the date of my last report, in the hands of applicants or their agents, for amendment, or for their further consideration or action. As the whole number acted upon was very great, the number of those partially decided cases was also great—and as they have from time to time been returned during the past year, they of course increase



the number of cases upon which I have been called to act, much above the number referred to me during the year.

The number of applications passed at my desk for patents during the year 1850, is 227—and the number of rejections 406. This last number includes all rejections, and is not confined to the number of *cases* rejected, as it is well known that many applications under new forms are rejected more than once, the whole number of rejections, therefore, is always considerably larger than the number of applications finally rejected. And the number of applications patented and rejected, is much greater than the number referred to my desk during the year. Thus the business of each year runs into the next, and in consequence of inaction on the part of applicants, applications are sometimes left pending for several years; some have been finally decided, nearly ten years after the filing of the same. Thus each year a part of the business of many preceding years, may require the attention and labor of the examiner.

By comparing the number of patents and rejections for the year 1850, with those for the year 1849, it will be perceived that their ratio has not materially changed. It would naturally be supposed that the number of patents relatively to the rejections, would annually decrease, but there has been no such change at my desk during the year that has just closed.

Prior to the introduction of the present system of examinations, applications for patents were never numerous. Although patents were granted to all who applied for them, yet owing to a want of revision by men of artistic knowledge and experience, they were found to be so imperfect, and so large a proportion of them were granted for things that were old, that they afforded very little security. No one feared to infringe a patent, as he was almost sure to be able to defeat it, for insufficiency of description, a defective claim, or for covering what could be shown to be old. The maxim was, that any patentee could be defeated who dared to commence a suit, and the most valuable invention seldom afforded any remuneration to the inventor. Patents were not only defective, but their reputation was bad, and the government did little else for the inventor than keep its promise to the ear.

This system, so utterly defective and so little calculated to accomplish the object for which it was intended, which placed the fraudulent or ignorant pretender on a footing with the meritorious inventor, and gave no protection to either, was finally condemned and abandoned in 1836, and the present system, subjecting all applications to rigid examination, and basing all patents upon novelty and utility only, and refusing them for all spurious and pretended inventions, was adopted and immediately carried into effect. Under this system examinations immediately developed the fact, that nearly half the alleged inventions upon which patents were claimed, were mere repetitions of what was already known, and nearly all the papers filed, upon which patents were to be based, were partially defective, and required amendment before letters patent could be granted.

Thus was marked an important era in patent interests. The standard was by degrees elevated, and old defective patents began to be re-issued in a corrected form, and covering novelties only. When patents granted or re-issued under this system were brought before the courts, it was found that almost without exception they were affirmed, and it was found that the infringement of a patent which had previously been perpetrated, without fear and with impunity, had become a dangerous experiment. Patent property began to be viewed in a different light, and after a few years of experience of the practical effects of the new patent system, almost universal confidence was inspired, and



those who had previously abstained from procuring patents because no confidence could be placed in them, now forwarded their applications to the patent office in great numbers. No considerable change was perceived, until the new plan had been long enough in force to be well tested—until the courts had by repeated decisions satisfied the public mind that patents granted under the new system could be relied upon, and that patents could not be infringed with impunity, and the new state of things was fully confirmed by “wailing and gnashing of teeth,” among those who had been accustomed quietly and with unconcern, to reap where others had sowed, and to enrich themselves by the dear bought discoveries of starving inventors.

At this juncture, applications for patents began rapidly to increase. Prior to 1844, for several years, the number of applications had averaged about 800; but in 1844, they began steadily and rapidly to increase, until in the short space of seven years, they have almost trippled; the number filed in 1850, being about 2200, while for *fifty years* under the old system, and the incipency of the new, they had only reached about 800. As time passes, this increase becomes more rapid; the increase of the last two years being much greater than during an equal space of time at any former period. It appears, therefore, that this system of examination, although it results in the rejection of half the applications filed in the office for want of novelty, gives such security for real inventions, as to foster and encourage the intelligent seeker after hidden truth in a vastly higher degree, than any system heretofore adopted in this or any other country.

A few remarks in relation to rejected applications cannot be amiss, as it is a subject much discussed before this office and elsewhere. When it is recollected, that about nineteen thousand patents have been granted in this country alone in less than sixty years—when to these are added the multitudes of thousands, which have been granted in the different States of Europe—when we recollect the thousands of volumes in our libraries of science and art devoted to inventions and discoveries; tens of thousands of which have never been made the subject of letters patent—when we recollect the vast extent and variety of machinery in shops, factories and laboratories, a description of which is nowhere published—we involuntarily exclaim, “who shall show us any new thing:” and when we consider how impossible it is, for inventors to be informed of all these things, or even to gain access to the archives, libraries, &c., where they are to be found, we cease to wonder, that so many inventions are found to be old, and our astonishment is awakened at the ingenuity and perseverance of a people, who can draw out so many new treasures which have been hidden from former votaries of science and art. We cease to wonder, that one-half of all that is presented to the Patent Office is old; but become surprised that nearly half who apply, have discovered something new. It is proper, further to remark, that the most respectable and best informed patent agents, decline to present *one half* the inventions presented to them, on the ground that they are unquestionably old. In all doubtful cases, they of course, make the application if requested. Other agents present a larger proportion, and nearly half who apply employ no agent. The proportion of the patented to the rejected, so far as can be judged by a general view of the subject, is quite as large as can be expected.

In relation to the inventions which are patented, it is proper to state, that it is believed there are very few, which would not be sustained by the courts with any amount of light which could be shed upon them; and this statement is fully sustained by past decisions. From remarks above, in relation to the



numberless improvements which have heretofore been made, and the multitude of books and records over which they are scattered, it could not reasonably be expected, that *every patent* should be sound. With the best opportunities, an old invention will sometimes be overlooked, and with the extraordinary amount of business constantly before examiners, the absolute avoidance of these oversights, would be positively miraculous. But their oversights are so few and trifling that little importance could be attached to them under any circumstances, and their importance is rendered still less considerable by the fact that the decisions of this office are not final, but can be revised by the courts, whenever there is ground to believe that an error has been committed; and it may probably be said, that less than one in a thousand of the patents granted since 1836, have been set aside. I do not recollect to have heard of one.

Indeed, since the re-organization of the office in 1836, patents have so uniformly been sustained by the courts, that many who desire to appropriate other men's inventions to themselves have changed their mode of attack, and strive to give battle under a parchment *Ægis*, similar to that which they have found so impenetrable in the hands of the inventor. The infringer accordingly takes the invention, which he desires to appropriate, and makes slight changes or additions, preserving the character of the invention, and then demands letters patent for his improvements. These changes are sometimes of a patentable character, though they are often of no importance whatever. If patentable, the patent is immediately used, and often with perfect success, to protect the infringer against the original patentee. Our patents on their face give to each patentee exclusive right to "make, use, &c." the thing invented, but this language does not convey the right idea; a large portion of our patents are granted, and rightfully, for new combinations which can neither be made nor used without infringing pre-existing patents. Thus the combination of A and B is patented, and subsequently some other person improves the machine, by adding another part D, to it. The improvement is obvious, and of course, a patent is granted for the combination of D, with A and B. It is seen at a glance, that this last combination cannot be used without involving the combination of A and B, and therefore, infringing the combination previously patented to another. Patents for combinations, necessarily involving previously patented parts or combinations, form a large proportion of the patents granted, and without them, there would be an end to improvements. But it is absurd to suppose that any patent is vacated by patenting an improvement upon it, however important, or that a patent for an improvement upon a machine gives a right to use the parts previously patented. *The patentee derives no right by his patent, to make or use anything which he would not have a right to make and use without his patent. But it simply gives him a right to prevent others from using his combination without his permission;* and if the wording of the patent could be so modified, as to "forbid all but the patentee to make, use or vend" the thing patented, it would conform to the true intent and meaning of the patent—would have the same force that the patent now has, and would save a vast amount of misapprehension, litigation, and loss to inventors, and prevent numerous impositions intentional and unintentional, upon purchasers, who now suppose from the wording of the patent, that they have a right to *use* anything patented, by permission of the inventor; but, who often learn shortly after the purchase, that there is another patent in the back ground, covering a part of what is embraced in the patent they have purchased.



These difficulties are incident to, and inseparable from the subject. The improvement is often vastly more important than the original machine, and a patent cannot be refused for it, without disregarding law and justice, and trampling upon the very objects for which patent laws are enacted; and as difficulties are great and unavoidable, they ought not to be aggravated by phraseology in the patent purporting to confer rights which are *not conferred, and are not intended to be conferred*, and which deceive a vast majority of those who are interested in patented improvements, and often enable a subsequent patentee of a trifling improvement to strip a prior meritorious inventor of his patent property.

When these improvements which are sought to be patented for purposes of fraud, as above indicated, prove to be unpatentable and are rejected, various kinds of influence are brought to bear upon officers charged with the case, and when finally rejected, the presses teem and the country echoes with charges of unspeakable frauds, and astounding disclosures, which are never made intelligible—and unspecified partisanship against the office and the officer who declines to be bullied or wheedled out of the path of his duty. It would be unjust to say that all who complain are of this character; some who are believed by this office to be honestly mistaken in regard to their rights, complain also—and although the office cannot agree with them in opinion, their feelings are entitled to respect. It is no trifle in the mind of any inventor to see the darling to which he has devoted the best part of his life, and to which perhaps his health and the comfort of his family have been sacrificed, in a moment, crushed before him, and his bright hopes scattered to the winds. It is no joke under such circumstances to return to his home to meet the despair of his family, and the mingled sympathy and jeers of his neighbors. Much may be pardoned to such a man, (and there are many of them,) and if his misfortune is without remedy, his complaints should meet with respect and commiseration. But the complaints of such men do not assume the fulminating character which generally belongs to those of the other class, and newspaper artillery and secret undermining intrigues, do not often emanate from such sources.

The law of patents is in many particulars difficult to understand. It is, as Mr. Justice Story justly remarked, the “metaphysics of law,” and even if all who present their claims to the office were fair minded men, who desire nothing but what they thought themselves entitled to, and the law was perfectly administered, there would be many to think themselves aggrieved. But those who have business here are like other men, some are perfectly fair and others desire to carry their point, and are not particularly scrupulous; one class are opposed to the grant of patents, and another class desire that patents shall be granted much more freely than the law will justify; one class denounces nearly all patents as fraudulent, another is furious that so many should be rejected. When a patent of any importance is granted, the office receives the condemnation of one clique, and when refused, it receives the condemnation of the other. It is believed, however, that the great mass of those who are interested in the doings of this office belong to neither extreme, and that they are content with a strait forward discharge of duty, which does not bend to denunciations or commendations of either party of noisy extremists—the condemnation of both furnishing, perhaps, the strongest proof of undeviating faithfulness, as a just administration of the patent laws could not meet the approbation of either. Justice is not what they seek.

The classes under my charge are the following:—1st. Mills, comprehend-



ing all kinds of machinery for crushing and grinding, regulators, horse powers, and mechanical movements generally.

2nd. Land conveyance, comprehending all kinds of vehicles and implements of travel, and transportation.

3rd. Machinery for working in lumber, comprehending saw-mills, planing machines, stave machinery, shingle, clapboard, lath machines, boring and mortising machines, &c., with the various implements and tools used therein.

4th. Hydraulics and pneumatics, comprehending water-wheels, windmills, machines for raising water, fire engines, filters, hydraulic engines, &c., &c.

5th. Manufactures of fibrous and textile fabrics, and machinery therefor, comprehending machinery for preparing hemp and flax, cotton gins, wool pickers, carding machines, combing machines, spinning machines, looms, cloth dressing machines, &c., &c.

Some of the improvements in these classes which have been developed at my desk during the past year, I shall concisely notice. It is impossible to command sufficient time to enter thoroughly into the subject. The report of 1847, upon which the last increase of the examining force was based, presented 1531 applications filed during that year, and the number filed during the last year is about 2200, and at the close of the year there were 34 applications upon my desk unexamined. It may further be remarked, that the influx of business is at present much more rapid than usual, and nothing apparently but a considerable increase of force can prevent an accumulation of business as perplexing as that which occurred prior to the last increase of force.

## MILLS.

About twenty-four patents have been granted within the past year for improvements belonging to this class, thirteen of which are for improvements in mills for grinding and crushing. So much has heretofore been done in this class, coming home as it does to the wants of man, even in a barbarous state, and having exercised the genius of the inventor from the earliest ages to the present time, that little of a radical character can be expected, and accordingly the improvements patented during the past year, consist of slight modifications of what was previously known. One of these patents is for a mode of steaming grain as it passes from the hopper to the stones, for the purpose of softening the outer coating of the grains to prevent its being ground so fine as to mingle with the flower in such a manner as not to be separated from it by the bolt. The idea of steaming preparatory to grinding, is not new, but the patent was granted for the inventor's convenient mode of applying the steam. Another of these mills consists of two or more hollow cylinders or rollers, the smaller being placed within the larger, and being free to revolve, so that when the outer cylinder revolves, the inner one will also revolve by its weight, and crush whatever substance may be placed in the outer cylinder. Up to this point the mill is old, but in addition it comprehends an arrangement by which the inner cylinder in addition to its weight in rolling, is caused to give a series of blows to the mass for the purpose of breaking the more refractory parts, and freeing others from their adhesion to the sides of the mill. Another pulverises sugar or other materials, in a series of mortars in which the beaters work in succession, while the range of mortars revolves in such a manner as to bring them to the feeding point, and to the discharge aperture, as the material in each becomes sufficiently pulverised. In another of the mills, a very firm elastic substance is placed in the spindle under the cock-head, to prevent



abrasion, and to relieve concussions. In another of the mills, the crushing is effected by a series of rollers, between which the grain passes without being rubbed, and the crushed particles then fall upon a toothed roller working a concave, when they are opened and afterwards the flour is separated from the bran. Several other patents for improvements in grinding have been granted, but it is not deemed necessary to give further details. Several patents have also been granted for improvements in bolting and dusting bran, which will not be described, but will be understood by a peruser of the claims.

*Horse Powers.*—But one patent has been granted within the past year for improvements in horse powers. The subject seems to be nearly exhausted, and until some new track is discovered, very few patents can be expected in this plethoric branch of machinery. The patent above mentioned is for an improvement by which the master wheel is held in position, or allowed to cant over, for admitting the horse.

Letters patent have been granted for an improvement in the friction clutch adapted to various resistances. It is so arranged, that as the pulley revolves upon the shaft, the friction of the clutch will constantly increase, until it becomes sufficient to carry the shaft, at which point the pressure becomes constant; but if the shaft becomes loaded in such a manner that the friction is insufficient to carry it, the friction will immediately be increased to the requisite degree, by the action of the machinery. The device appears to possess much merit.

Letters patent have also been granted for an improved form of rubbing surfaces, for regulating abrasions; a full description of it cannot be given here, but will be found in the English journals. It was patented in England in November, 1848. All are aware that journals, after considerable use, become loose in their boxes, in consequence of friction, and it is well known that boxes and journals have been made in a conical form, or nearly so, in order that after being worn, the joint may be made tight by pushing the journal further into the box. But this plan is an imperfect one, as the different parts of the journal and box will not change their diameters equally. The invention above alluded to, is intended to obviate this inconvenience, with what success, the public have an opportunity of judging. As nothing further is deemed necessary on this division of the subject, I will proceed to the next.

## LAND CONVEYANCE.

About fifty patents have been granted during the year, for improvements belonging to this class, and extending to nearly all its sub-divisions.

*Railroad Cars.*—Five patents have been granted for improvements in railroad cars within the past year. One is an apparatus for holding the wheels upon the rails, the parts of which are so connected as to yield, without injury or diminution of efficiency, to the lateral motions of the car. Another is for a kind of segment connection of the car body with the trucks, by which the trucks are carried as far as may be, to the outside of the curve, and thus afford more safety to the cars in turning curves at considerable speed. Very large car bodies have also been supported at a considerable distance from their ends, upon the centres of the frames of two eight wheeled trucks, the frame of each truck being connected with the wheels in such manner as to give to each truck the capabilities of ordinary eight wheeled cars. There has also been a re-issue of a patent for hanging car bodies, which was granted eight or ten years since, and which, at the proper time, was noticed in the examiner's report.



*Car Couplings.*—Four patents have been granted within the year, for improved modes of coupling railroad cars. Two of them are for self-coupling, with convenient arrangements for uncoupling in emergencies; one is self-disengaging when the car leaves the track, and a third is a firm coupling, which allows no play of the links, except laterally, and no disengaging or connecting, but by the withdrawal or insertion of the bolt by hand. They do not very strikingly differ from such as have heretofore been in use.

*Cast Iron Car Wheels.*—Seven or eight patents have been granted within the year, for modifications of cast iron car wheels. They do not greatly differ from those heretofore in use, and do not require a minute description in this place. The great difficulty in the construction of these wheels, consists in their liability to strain or fracture in cooling, and therefore, patents are granted with great liberality for such modifications as may obviate, in any degree, the inconvenience universally experienced in the construction of this kind of wheel.

A patent has been granted for improvements in cars for plank roads. It is a modification of those whose wheels carry around with them an endless chain, upon which the wheels always run. The links are so formed and arranged, as to prevent, in some degree, the injury which the road would sustain from the direct action of the wheels.

*Carriages.*—Two or three patents have been granted for brakes applicable to wheels of carriages and cars. One of them is so constructed, that after the brake is put upon the wheel, it will remain there, doing its duty, until removed by a device separate from that which brings it into use. In one of the patented carriages the dash board is connected indirectly with the fore wheels, so that as the horses turn, the board will constantly be kept directly behind the horses. Improvements have also been patented for improved couplings for swingle trees, and for improvements in detaching horses from the same by the driver, when the carriage is in motion.

A patent has also been granted for an arrangement of the parts of a carriage, in such a manner that the fore end of the carriage body shall always be supported at its centre, and the fore wheels under it shall be capable of swinging around, by virtue of a joint in the reach, in such a manner that very short turns may be made without bringing the fore wheel against the side of the carriage body. Several patents have been granted for improvements in connecting and disconnecting wheels and axles; for setting up carriage tops; in the construction of covered carriages; for improvements in neck yoking reaches, &c. In an omnibus patented, there is a device by which the driver, as the omnibus stops, may bring brakes upon the wheels, and by the same act put down the steps for the ingress or egress of passengers, and upon withdrawing his foot from the lever, the steps are again folded up and the brakes removed from the wheels.

Three or four patents have been granted for improvements in raising and lowering carriage tops by devices inside of the carriage. The joint rods in one of them, are so arranged on the outside of the cover, and so connected with a handle inside, that by placing the hand upon this handle, the whole carriage top may be raised or lowered at pleasure. In another, the whole or a part may be raised and lowered in a similar way. In another, a spiral spring is placed upon a rod in the inside of the carriage, and the rod so connected with the joint rods, that nearly the whole weight of the carriage top is sustained by the spring, and the slightest force from within is sufficient to raise or lower it.



Other patents have been granted belonging to this class ; but those noticed, are a fair specimen of the whole. Very striking improvements are not to be expected in carriages, and it is unnecessary to pursue the subject further.

## HYDRAULICS AND PNEUMATICS.

About 24 patents have been granted within the year, belonging to this class. They are quite diversified in their nature, and are scattered over ten sub-divisions.

*Pumps.*—Six patents have been granted for improvements in pumps, one of which is a re-issue. One of these is for use in very deep wells. It has no piston, but the pump tube, which has a valve at the bottom opening upwards, works up and down in a valve chamber at the bottom. It is said, that this pump may be worked by hand and with comparative ease will raise water eighty feet or more, when it would be impossible to raise water with a hand pump having a piston of any construction. A patent has also been granted for an improvement in that variety of rotary pump, in which there are two pistons, each of which serves alternately as a piston and a stop. The improvement has reference to the alternate releasing and carrying forward of the pistons. Another of these pumps consists of a tight chamber into which the induction tubes extend considerably *above* the bottom, and into which a pump is inserted, extending down very near to the bottom and below the tops of the induction tubes. The pump is separated from the induction pipes by a gauze partition to prevent grain or other matter from passing to the pump, and in the side of the pump, there is a small opening above the point where the water is intended to rise, through which the air which passes up through the induction pipes is pumped out. This apparatus is intended principally for vessels, which transport grain, &c. In another of these pumps, the piston rod has a fixture attached to it, for agitating the water in the well.

*Filters.*—Two patents have been granted for improvements in filters. One of these is composed of two concentric cylinders, the inner cylinder having flanches at its ends which entirely close the annular space between the two, so that the water enters the inner cylinder which has openings through it, to the annular space at both ends, and is divided into nearly equal parts, by a partition perpendicular to its axis, so that the water passes into the inner cylinder at one end, through into the annular space, and again from the annular space into the other end of the cylinder whence it escapes. Around the inner cylinder and between its flanches, is wound cloth or other filtering material filling the annular space, and if from any cause the filtering medium should cease to fill the space, the filter would be repaired by winding more on the cylinder. The other is called a pocket filter, and consists of a tube through which water is drawn by suction with a filtering material at its lower end. This filter is for use in drinking where the water requires filtration.

Three patents have been granted for improvements in hydraulic apparatus for producing blast. They consist of wheels with compartments in or connected with their peripheries, and revolving in reservoirs of water. The compartments of course, carry air down with them, which when they enter the water, is displaced by the water, and rises through tubes forming the blast. These machines are complex, and perhaps an equal or better result might be obtained in a more simple manner and at less expense.

Letters patent have been granted for a mode of drawing and bringing water from a distance. It much resembles those previously known.



A hydraulic regulator has been patented within the past year. The machinery to be regulated, works a pump which forces water into another cylinder with which the pump is connected at both ends. The cylinder into which the water is pumped, is in a vertical position, and has a piston in it with an adjustable opening through it, and a piston rod passing out at the end of the cylinder, and taking hold of an arm from the valve to be regulated by a slaut and pin; so that the piston and rod may move a certain distance without changing the valve at each operation of the pump. The apparatus is so adjusted, that the water pumped into the cylinder when the machinery works at proper speed, shall pass through the openings in the piston without giving it sufficient motion to disturb the valve; but when the operation is too fast or too slow, the vibrations of the piston will cause the end of the slaut to give a *blow* to the arm of the valve moving it in the direction desired.

*Water Wheels.*—Three patents have been granted for improvements in water wheels within the year. The modifications which they present, are very slight. Improvements upon water wheels at the present day, depend more upon correct calculations in adapting the wheel to circumstances and upon mechanical execution, than upon invention; and these are no more the subject of letters patent, than a change in the angle of an inclined plane or wedge, to adopt it to the particular duty it has to perform.

Two or three patents have been granted for improvements in waste gates. One of them is formed like a trapezoid, (but may be varied,) narrow at the bottom and broad at the top, with one side nearly vertical and hanging upon a vertical shaft, so that when the water is low, the surface of the gate upon which it presses, is mostly on the side which tends to close it, and as the water rises, the opposite side being wider at the top, finally causes the pressure to be greatest on that side; and the gate is opened and continues so, until the water descends to the point when the preponderance of pressure is changed, when the gate again closes.

Two patents have been granted for improvements in faucets; one of them is a molasses gate, and the other filters the water as it passes circuitously through.

*Water Metres.*—Two patents have been granted for improvements in water metres; both are intended to be operated on by the water. One of them presents a slight modification of a rotary engine and a rotary pump, of well known construction. The other is a modification of a double cylinder single acting engine, entirely enclosed in a case. In this the pistons remain stationary for a short time at the end of each stroke, in order that the discharge may be more perfect. There is nothing further in this class which need be particularly noticed.

## L U M B E R.

About sixty patents have been granted within the year for improvements in this class, and they extend to about ten of its sub-divisions, and to various improvements of a miscellaneous character. A considerable variety of machinery has long been known for performing almost every operation in lumber to which machinery is applicable, and in casting the eye over the improvements of the past year, little is seen which possesses commanding novelty. The inventor of the present day is in a very great degree limited to refinements of a practical character, upon principles long since in many ways reduced to



practice. The object of improvements and inventions generally, is to produce a given result in a better or more convenient manner than heretofore, or to produce new or useful varieties of manufacture; but there are often other incentives to invention, equally powerful, and which are illustrated in the class under consideration. In several of the sub-divisions of this class, there are machines, the patents for which are still in force, which, according to the general current of decisions in the courts, lie at the foundation of, and monopolise the radical principles of all or nearly all machinery which can effect the objects which they are intended to accomplish. These varieties of machinery are greatly in demand, and are of the most extensive application, and consequently vast interest, and multitudes of our citizens are held under contribution to their more fortunate rivals, who first discovered and secured to themselves and their representatives, these invaluable elements. The condition of the enterprising and ingenious tributary is of course irksome, and he strives for freedom, while the patentee insists upon his "bond." This circumstance is the parent of multitudes of inventions and quasi inventions, and applies the most effective stimulants to ingenuity; each would be rejoiced, if possible, to produce better machinery than is now known for similar purposes; but if baffled in his attempts, he devotes himself even to those which are somewhat inferior, to avoid the claims of the prior patentee upon him. There is also, as I have remarked, an idea extensively entertained, that a patent will in some way give protection against the demands of the prior inventor, and consequently, patents are demanded far beyond what would be prompted by the force of different circumstances. These machines sometimes possess patentable novelty, but it is notwithstanding the province of the courts to determine whether, in addition to these novelties, they do not possess the essential elements of inventions previously patented. The *novelties* are secured by the new patent, *and not* the elements with which they may be united or blended. It is not to be presumed that all these inventions are prompted in the manner above indicated, but the origin of many can be thus traced, and whatever cause may produce inventions, they ultimately result in the advancement of the arts, and in benefit to the world.

*Saw Mills.*—About ten patents have been granted within the year for improvements in sawing lumber. The saws in one of these mills are circular, and two are operated at the same time. The shaft of one of these saws is allowed end play, both by a spring and by adjustment, and is also capable of swinging upon the shaft of the other saw, as a centre. When the timber is large, the auxiliary saw can be placed in a proper position to co-operate with the main saw in cutting one kerf, and when the log is small, it may be so adjusted that the mill will saw off two boards at once. In another of these mills the saw is furnished with a kind of cross head at each end, which extends out some distance in front of the edge of the saw, extending around a way prepared for it, against the front of which it bears. Thus when the log presses against the edge of the saw, it has a direct tendency to preserve the width of the saw in the line in which the log moves. As the saw is generally hung, the tendency of the log is to turn the saw out of its proper position. One of these patents is for an improvement in the saw itself. The front of the tooth is slightly hooked, but the backs of the teeth are all parts of the same line, coinciding with the line of the edge of the saw, and the point of each tooth is bent out a little, to take hold of the work. The part of the tooth back of the point does not retire. Experiments made with this saw, seem to indicate that the improvement is of great value. Improvements have also been pa-



tented in noddle irons, in the mode of setting saw logs, and in cross cut sawing machines.

Five or six patents have been granted for machinery to cut veneers and clap-boards, and for cutting and dressing staves. In one of these, the knife is placed in an ordinary gate, and that part of the block which is to be separated, rests upon the edge of a spring attached to the table in a position nearly parallel to the knife.

Thus the edge of the veneer is supported until it is entirely separated, and when separated, the spring yields outwards to allow the knife to pass it without injury. In another a very perfect curved drawing cut is effected for cutting staves, which appears to answer a good purpose. The power is exerted lengthwise of the knife, and its descent in the proper curves is effected by slauts, pins and ways.

A patent has also been granted for a new mode of jointing staves, which evinces much ingenuity, but it could not be made intelligible in a short sketch, and must therefore be omitted with some others in this sub-division.

### PLANING MACHINES.

Twelve or fourteen patents have been granted within the year for improvements in machinery for planing boards, shingles, &c. One of these machines is intended principally for planing timber. A disc cutter-head is used with smoothing irons in its face, and its edges armed with an annular saw and clearing cutters immediately back of the saw, for the purpose of removing such parts of the wood as are separated by the saw. The centre of the disc presses upon the smoothed surface of the timber, upon which the operation is performed.

Two or three devices for tonguing, grooving, jointing, rebating or otherwise dressing the edges of boards have also been patented, and promise considerable usefulness. In one of the patented planing machines a circular disc cutter-head is used, and the knives are placed around its edge in such a manner, that they move as nearly endwise as is consistent with continued cutting, and each commences cutting before the preceding knife has ceased. This machine has also for tonguing and grooving, a series of saws on shafts perpendicular to the face of the board, the saws varying in diameter according to the shape to be given to the edge, and the planes of all the saws making a slight angle with the axes on which they are placed. Another of these machines is adapted to dressing boards of varying widths,—the edge cutter on the edge of the board is by the action of the board, as it moves forward, caused to approach towards, or recede from the centre of the board, or it may be kept in the same position throughout the operation, for the purpose of producing a straight joint, or giving a certain angle to the edge of the board. This machine has also a device for adapting the feed rollers to any required thickness of stuff, without impairing the action of the gearing. In another of these machines, the board is made to bend slightly over a cylindrical cutter head, and the rest on the upper side of the board is connected to the cutter-head in such a manner as to render the smoothed face of the board parallel to the opposite face while the shavings pass downwards into a proper receptacle, the bend preventing the knots from being torn out by the cutters. The pressure rollers in these machines have also been so arranged, as to approach nearer to the cutter head as the stuff to be planed is thinner, and a cutter nearly in the form of a straight saw has also been used for planing the surfaces of boards. Some re-issues have also been granted.



*Boring and Mortising.*—Five or six patents have been granted within the year for improvements in machinery for boring, mortising, and tenoning. In one of these machines the central part of the auger is separated from the twist, passes through it, and revolves in boring at a different speed from it. Thus the clogging which often takes place, when the boring and clearing parts revolve together, may be avoided by adapting the motions of the different parts to each other, in such a manner, that each shall perform its duty unembarrassed by the other. In one of the tenoning machines patented, the cutters are jointed to the gates or sides, and are connected with such devices that when they descend they shall be thrown a little forward, to cut, and when they return, they are in like manner thrown back, so as to avoid rubbing against the surface upon which they have just operated. In one of the patented mortising machines, the parts are so arranged that the chisel turns as it descends, thus giving at each stroke a drawing cut. This will doubtless in some instances, be useful.

Some half-dozen patents have been granted within the year for improvements in fences and railings, and about twelve more for miscellaneous improvements in the class of lumber. They are of equal average importance with those which have been noticed, and enough has been said to give a fair idea of the character of improvement in this class, during the past year.

#### FIBROUS AND TEXTILE MANUFACTURES AND MACHINERY.

About seventy patents belonging to this interesting class, have been granted within the last year. As I have had occasion to remark in former reports, improvements in these branches of manufacture appear to be without limit, and notwithstanding all that has been done, the tide of useful and valuable inventions is still onward. Machinery for fibrous and textile operations requires a degree of perfection which is demanded in but few branches of the arts, and it consists of so many parts and combinations, and so much of it is of an extremely complicated character, as to afford the most ample room for improvement, and the time requisite to bring other branches of machinery to their full maturity, is scarcely sufficient to conduct this out of its infancy. Much as has been done in this class, and wonderful as its improvements have already been, every year makes numerous and important additions and gives promise of more astonishing developments in future. This class includes every variety of machinery which is necessary for reducing the various kinds of fibrous materials to perfect fabrics.

But three patents have been granted within the year for improvements in cotton gins. One of these machines has a plate with teeth at its end, passing between the saws and is placed in a horizontal position behind the grate, and is combined with a brush operating upon the fibres in the saws, to remove the dust and conduct it off upon the plate. The other has a series of small rollers grooved lengthwise, each having a portion removed from its side arranged around a toothed cylinder. These small rollers revolve slowly as the toothed cylinder revolves, and prevent the bolls which rest against them, from passing, while the toothed cylinder takes the cotton from the seeds. When the side of the small cylinder from which a part has been removed, comes opposite to the toothed rollers, if the boll is sufficiently reduced, it will be carried to the next roller, when the seeds will be still further stripped, and so on, to the completion of the operation. Brushes are prepared to take the fibre from the toothed cylinder. A third machine delivers the cotton in endless bats.



*Hemp and Flax.*—Four patents have been granted within the year, for improvements in machinery for preparing hemp and flax, which do not require particular description. In one of them, there is a device for separating and drawing out the fibres, so that it may be spun like cotton.

*Carding.*—About four patents have been granted for improvements in carding machines. In one of them, the main cylinder has, in addition to its usual motion, a reciprocating end motion, for the purpose of more perfectly spreading the staple over its surface. In another, a band armed with card teeth works constantly across the cylinder near the doffer, for the purpose of crossing the fibres to produce a bat proper for felting. In a third, wires are connected to good conductors, and with the teeth which operate upon the wool, for the purpose of preventing injurious electrical action. A process of mixing wool and cotton on the cards has also been patented. Each staple is prepared on separate machines until both are ready for the finisher, when they are carried together through the cards and mixed.

Letters patent have also been granted for improvements in apparatus for sizing and drying cotton batting, and for improved apparatus for making hat bodies. They do not greatly differ from such as have heretofore been known.

*Spinning and Twisting.*—About fifteen patents have been granted within the year for improvements in these sub-divisions; one for improvements in the counter twist speeder. Its object is to prevent the irregular and unsteady motion of the roller upon which the roving is wound. Another, is for an improvement in drawing regulators. It performs substantially the same duty as some already in use, but in a different way. The regulating apparatus is governed by the trumpet as in some other machines. A patent has been granted for improvements in cop spinning. It is a new arrangement of devices for regulating the winding of the yarn in the cop. A combination has also been patented to be used in doubling and twisting, and for stopping the machine when either of the threads break. An improvement has also been patented for use in doubling and twisting silk. It is for holding and releasing the threads, and consists of a bar with a series of spring catches closed by independent springs, but opened simultaneously by a sliding sluated bar—or each may be opened at pleasure, without the intervention of the bar. By this device, the operation is much facilitated. A hand spinner has also been patented, which is a slight modification of others in use. A device for regulating the tension of yarn in spooling, has also been patented; and also two or three machines for making cordage, which are said to answer a good purpose.

Patents have been granted for a knitting machine, for improvements in the manufacture of rugs, folding cloth, shearing cloth, pressing hats, and for other miscellaneous purposes.

*Sewing Machines.*—No less than seven patents have been granted within the last year for improvements in sewing machines; it is but a few years since these machines were introduced, but as they are found to be useful, inventive genius is already directed in no small degree towards them, and important improvements may be expected. In one of these machines, the needle lies in a groove made in the face of a straight rack, and is held in this position. A pinion works into this rack upon which the cloth is laid—the pinion being at the point of the needle. When the pinion is turned, it at once crimps and carries forward the cloth upon the needle and discharges the cloth by a reverse motion with the seam sewed. The eye of the needle is near its point. In another of these machines, the cloth is placed upon the



plate of metal lying over an opening in the table, and perforated for the passage of the needle. The needle is forced through the cloth and the plate, by appropriate machinery. The thread is placed under the plate upon a bobbin, and when the needle is down, by an appropriate motion of parts in connection with the bobbin, the thread is thrown round the needle, which has a notch to hold it, and is drawn through as the needle is withdrawn, and forms a loop on the upper side. The cloth is then fed forward, and the needle is again forced through the cloth and plate, and through the last mentioned loop. The thread is again wound upon the hook of the needle, and drawn up through the cloth and the loop through which the needle previously passed, and by a continued repetition of these operations, the seam is perfected. Several of these machines make the seam with two threads, one of which passing through the eye of the needle, (which is at its point,) is at every stitch carried through the cloth, forming a loop on the opposite side. A shuttle having a thread passes through the loop, and as the needle returns its thread, is drawn down upon the shuttle thread which prevents it from being drawn through. I cannot go fully into the details of these machines; they are adapted to various circumstances, and make their seams by a variety of stitches.

*Looms.*—About twenty-five patents have been granted within the year for improvements in the different varieties of loom. An unusual degree of attention has been bestowed upon those which have reference to weaving piled fabrics. No less than six patents have been granted for improvements in the manufacture of this variety of fabric. In one of these looms two figuring wires are used, entering the fabric on opposite sides, operated by vibrating arms, and supported by guides at each side. In this manner, the wires may be made about half as long as would otherwise be necessary. Thus the binding of the wire in the act of insertion, is in a great measure prevented. Or these wires may be made of the full length, and inserted and withdrawn alternately, so that one will remain in the fabric, while the other is withdrawn and re-inserted. When such warps are used that two wires will be sufficient, the operation will be much facilitated by this modification. In another of these looms, when two fabrics are woven together, and connected by the threads which are to form the nap, a kind of grate is used to guide the fabrics as they are woven, and to keep them always at an equal distance apart. This device also enables the knife to separate the fabrics in such a manner, as to leave the nap or pile of uniform length. In another of these looms, the guides which support the wires, are composed of jaws which rise and close, leaving a series of small openings through which the wires pass for the purpose of being more perfectly guided, and which open and descend, leaving the wire after it has been properly inserted. In another of these looms, a knife is made to pass below the breast beam which cuts the pile, allowing at each cut one of the wires to be released and to fall into a trough below. An arm extends from the knife holder into this trough, and pushes the last wire, which was released to the left of the loom, and then leaving it in a trough, and two endless belts with hooks work into the trough, taking the wire and carrying it up above the lay at the left end of which there is a trough to receive it opposite the end of the lay. In this trough there is a follower moving lengthwise of it, which pushes the wire into the shed, there being a row of notches in the front sides of the dents of the reed to guide the wire. Thus the wires are inserted, and as the fabric is woven, the pile is cut and the wires returned for re-insertion.



Letters patent have also been granted for improvements in looms for weaving fabrics with small figures. It has not the compass jacquard loom, but it is less complicated, and much more easily adapted to different varieties of figures. The loom has sufficient compass to answer its appropriate purposes, and avoids some disadvantages in working the harness with the jacquard, without sacrificing any of its advantages which are important in weaving the kind of fabrics for which this loom is intended. Patents have been granted for improvements in throwing the shuttle; for making wire heddles; for sizing twine heddles, and for protecting the reed when the shuttle fails to enter the shuttle-box. A hand loom has also been patented, in which all the motions are derived *directly* from fixtures connected with the lay, and for a temple to be used in weaving seamless fabrics.

Other improvements in looms, apparently of great value, have been patented, but neither time nor the complicated nature of this variety of machinery, will justify a further analysis of this class.

It will be perceived by a perusal of the foregoing remarks upon the classes committed to my charge, that the past year, like most others, has developed but few inventions which open new paths, or are otherwise of commanding importance. They are all believed to be useful in the legal acceptance of the term, and many of them will be found beneficial in various degrees, in the branches of the arts to which they belong; some are, however, of very little importance, but their novelty, under the law, entitles them to security by patent, and it is not legally to the purpose, to say that they are no better than things previously known, if they are essentially different. Every one will admit that great and important inventions should be secured to the inventors, and that the benefits flowing from them to society, are so great that all the inconveniences of the system are as nothing. There are numerous inventions within the knowledge of all, which have produced results so important and beneficial, that any one of them would outweigh all the evils and expenses of all the patent systems of modern times; such inventions are of comparatively rare occurrence, but may be expected more frequently as a knowledge of the arts progresses. These, all admit, should be provided for; but the same law which provides for them, must provide also for minor inventions. It is impossible to separate them by legislation; we must loose *the one*, or receive it in connection with the other; and when we recollect that the greatest inventions are often based upon small beginnings, who would desire to frown down those apparently diminutive inventions, from which such splendid results may and often do arise?—a blow aimed at them would inflict a fatal wound upon the growth of the arts, and through them, upon the vital interests of mankind.

W. P. N. FITZGERALD,

*Examiner of Patents.*

To Hon. THOMAS EWBANK,

*Commissioner of Patents.*



SIR:—In accordance with your request, I have the honor to submit to you the usual report of the transactions; with reference to such applications for patents as are entrusted to my charge, accompanied as is also customary by brief notices of some of the inventions for which patents have been granted. The whole number of new cases submitted to me for examination during the past year, amounted to five hundred and twenty-nine; of these two hundred and four have been patented, and twenty-five remain unacted upon. The papers appertaining to others, are still in the possession of either the applicants or their attorneys, having been sent to them for amendment, and still others have been rejected and withdrawn. The number of actions upon these various cases has amounted to one thousand and ninety-five. And the number of formal rejections, sometimes two and three to a single case, included therein, reaches the number of three hundred and fifty-three.

As the nature of the various actions upon cases was explained with some care in the reports of myself and colleagues, for the year 1849, I do not deem it necessary again to call your attention to that subject, observing merely in reference to that portion of my own report, that the best efforts of myself and colleagues, have as I predicted, been unable to keep pace with the increased demand upon our labors, arising from the increased number of cases, and that the work before the office is now accumulating. It is my sincere hope either that the force may be increased, or that the cases presented during the year to come may be of such character and so limited in number, that we may be enabled to act upon them all. I know of no one cause which harasses the mind of the inventor to so great an extent as delay in the examination of his case, and I can well imagine how disappointment, arising from the discovery that his invention has been anticipated, is aggravated, when the communication of such unwelcome news is delayed from week to week, and month to month, during all which time he is, as men usually do, picturing to himself in no faint or undecided colors; the honors and the profits, which are to accrue to him, from the production of his brain. A communication to such an effect is to all men a disappointment; others it irritates, and there is a small, I am glad to say but a small number, who conceive that a decision against them, furnishes good ground for a quarrel with this office, and is based upon either ignorance or prejudice. These parties generally labor under misapprehension as to the duties of this office, and are unacquainted with the causes that led to the establishment of the present system. They do not seem to consider that the refusal of patents for devices which have been heretofore known, enhances the value of such patents as are based on novelty. They appear never to reflect that if all the patents asked for were granted, then would the community, unable to submit longer to the burden imposed upon it by patents granted for old things, and justly unwilling to pay for the right to use that which is common property, call upon the government not merely to establish such a system as is now in force, but perhaps to refuse protection even to original and useful inventions. It appears further, that it is a common misapprehension for these men to suppose that this office is established to protect and encourage invention, and to afford facilities to inventors, meaning by that term, not those who have contributed to the arts, but every person who may find it convenient to make application for a patent. When the term is employed in its true sense, then is their opinion a correct one, provided the duties that this office under the law owes to the public are also taken into consideration.



This office stands in fact between the public on the one side, and the inventor on the other; its duty to the former, however disagreeable it may be to those who perform it, is to see that no machine, art, or process, or improvement thereon, receives the protection of a patent, granting to the owner a monopoly of the same, unless there shall exist in it some new and useful thing heretofore undescribed. Its duty to the inventor, is to grant patents to him for such new and useful improvements, aiding and assisting him, as far as possible, to cover every inch of ground to which he has a clear title, and when the deed for that title is granted, seeing as far as the law will permit, that he is not harassed and ruined by the grant of other titles, for apparatus changed indeed in appearance, but not altered in reality, from that described by the original inventor.

There is another misapprehension, not productive of so much mischief, nor leading to so much ill feeling, which it will be well to notice. True inventors are often rejected, having their claims disallowed many times, merely on account of their not claiming that to which they are entitled, presenting to this office claims for old devices, covering ground which is either common property, or appertains to some previous invention.

By examination of references furnished by this office at each time it rejects, they at last perceive and are able to define the precise point in which the invention consists; their way to a patent is then a clear one, and the propriety of withholding the same up to that time, would appear to be obvious. Such however, is not the case, and there are some applicants, and even some patent attorneys, who ought to be better informed, who think that the office in this way, loads itself with useless labor and harasses the applicant with unnecessary delay. The absurdity involved in granting a deed for that to which there is no title, and not the shadow of a claim, when the applicant has, during the whole time good and sufficient warrant for something else which really belongs to him, and is afterwards, and as soon as he applies granted to him, seldom or never seems to strike their minds. When it does, they wonder that the office did not point out the new thing, light upon it by intuition, and explain it to the inventor, forgetting that he who made the machine is, or ought to be, best acquainted with its peculiarities; forgetting too, how excessively awkward it would be (to say the least,) for this office one day to state that it believes a thing new, and discover by examination, or be informed by the inventor himself the next day, that it is old.

I have discussed these points at some length, for one reason, and for one reason only, namely, that I believe an exposition of the true position of this office will lead to an increase of good feeling between it and the whole brotherhood of true inventors, and that they will continue to believe, that in performing our duties we are acting under a true sense of the responsibilities of our position, and striving with the best lights we possess to do those duties impartially and honestly; and that they will acknowledge when we happen to differ from them in opinions, and are perhaps in error, from which no human tribunal is free, that such errors in judgment arise merely from mistaken sense of duty, and not from want of sympathy with their feelings, or desire that they should be deprived of their rights.

During the past year, three appeals to his honor, the Chief Justice of the District of Columbia, have been taken from decisions made in the classes which are under my charge. In all of these, the question of novelty in the alleged invention was the point in dispute, and in all of them the decision of the office has been affirmed.



Of the patents granted in classes allotted to me, during the present year, but few are based on striking novelties in principle, but few point out entirely new pathways to old results; they are generally modifications in, and improvements on well known apparatus, detours from some points in the beaten track, passing around an obstacle and returning again to the old trodden road. A large majority of the inventions thus patented, promise to afford useful practical results, appearing to be made by those well acquainted with both the excellencies and the defects of existing contrivances, and not emanating from that class of minds which would reform before the evil is known; would bring forward systems new to them, but long since abandoned by those acquainted with the art. In noticing these inventions briefly, I will as far as possible follow in the order observed in my last report, not only as regards the classes, but the sub-divisions of the same.

### METALLURGY.

In this large and important class, about ninety patents have been granted, which are divided among the various sub-divisions of this class, much in the same ratio that they were during the preceding year, with the exception of those which have for their object the separation of the precious metals from the impurities with which they are found mechanically mixed. These ore washers, or gold separators, are not so numerous in proportion, as during the year 1849. The field of invention has been, to a great extent, covered by the machines of the previous year, and there is more difficulty in discovering novelties, either in the application of principles, or in the adaptation of mechanical devices for bringing such principles into more successful action. Moreover, the market is filled with the machinery already manufactured, the demand and the profits are both more limited, and there is less inducement for the inventor to rack his brains, and concentrate his abilities for the improvement of this class of machines.

But five patents have been granted for such machines, and only two of these differ in any great degree, from those previously existing. In one of these the finely pulverized ore and water is introduced into a revolving basin, the cavity of which is deepest near the edges. From the bottom of the deepest part of the basin, and attached to it, descend tubes largest in their bore at their upper ends. As the basin revolves, the lower ends of these tubes, which are all on the same level, pass in succession over the surface of mercury contained in a ring shaped trough; their length being sufficient to give the stream of ore and water passing through them such an impetus as will drive it to the bottom of this trough. The water and the impurities rise by virtue of their greater levity, to the surface of the quicksilver, and run to waste over the sides of the trough. A portion of the gold is amalgamated and retained by the mercury, other portions of it rise to its surface, but as they rise are met, and again forced under by the stream of fluid proceeding from the next succeeding tube. The gold is thus immersed and reimmersed continually, until it is kept so long in contact with the mercury, as to be amalgamated and retained.

The machine is said to save nearly all the precious metal, and to be working to advantage on the Virginia ores, which yield but a small per centage of gold. In the other machine referred to, a species of oscillating and *shocking* motion in two directions, in planes at right angles to each other, is communicated to the same pan. It is not known that this machine has come into use, but its peculiarities appear to be such as would render its action successful upon ores, in which the gold is found in large particles.



A process for making steel from cast iron has been patented, the novelty in which consists in decarbonizing cast iron, in the shape of thin plates, and piled in layers, with strata of pulverized oxide of iron. The materials thus arranged, are exposed to the action of heat for several days, in an oven, such as is employed for making blistered steel, care being taken not to raise the heat sufficiently high to melt the mixed mass. Samples are from time to time withdrawn, to ascertain the degree to which decarbonization has proceeded. When the operator judges that the proper extent has been reached, the thin plates are withdrawn and treated in a crucible, much in the same manner as blistered steel is, when converting it into cast steel. Good steel is produced by this process, and works for carrying it on are now in successful operation.

A patent has been granted for improvements in well known processes for obtaining wrought iron directly from the ore; the novelty consisting in arranging the deoxydizing chamber, which is heated by the waste heat, in such a manner that its contents shall not be exposed directly to the flame; while at the same time they can be permitted, at pleasure, to descend upon the working bottom below, without being exposed to a current of unburnt atmospheric air.

Patents have been granted for several tuyers, and for an improved arrangement of a steam boiler, in connection with a cupola furnace.

A patent has been granted for an improvement in steam hammers, the novelty consisting in attaching the hammer to the cylinder, instead of to the piston rod. The piston stands at rest, while the cylinder rises and falls; the advantages of the arrangement are obvious, and the inventor proved that his discovery was prior to an English publication of the same apparatus.

A patent has been granted for certain very ingenious improvements in the blacksmith's striker, which is worked by the foot of the smith. An intelligent description of them, without a drawing, would be difficult.

Two patents have been granted for devices for giving a rotary motion to the fluid iron from which chilled rolls are cast; and one for a plan by which large kettles can be cast with facility in metallic flasks, which are in shape nearly similar to the kettle to be produced. The process consists in applying a stream of cold water to the inner half of the flask or lantern which supports the core, at a time when the melted metal enclosed, is arrived nearly at a solid state. The inner part of the flask is thus caused to contract rapidly, and when contracted in diameter, it can easily be withdrawn, both from the kettle and from the exterior half of the flask.

Another plan for accomplishing the same result, has been devised and patented; it consists in making the core supporter, or inner half of the flask, a flexible iron basket, which, it is obvious, cannot be either broken, or pinched fast by the contraction of the cooling kettle.

Patents have been granted for an apparatus for applying water to the outside of the hubs of cooling car wheels; for machinery for forming cores for small pipe; and for improvements in the composition from which small cores are formed.

A very ingenious machine has been patented for forming the wrought-iron railroad chairs, which are now by degrees taking the place of the cast ones hitherto employed. In this machine, the iron in bars of the width and thickness of the intended chair is fed by hand between a pair of moving jaws; which, as they approach each other, cut off the proper length for a chair, punch in it the spike holes and clamp it firmly between them. While the



blank is thus held, a pair of punches rise up, make the necessary slits in the chair, and as they proceed, bend the lips at right angles to the bed. These same punches, then approach each other and bend the lips over towards a common centre, and into such a shape as shall embrace the lower fin of the rail. The upper jaw then rises and separates into two parts, and the finished chair is thrown from the machine by a discharger.

A machine for making chains into which a wire or rod is fed by self-acting mechanism, and from which a finished chain is discharged, presents, perhaps, the most curious triumph of persevering ingenuity over apparently insurmountable difficulties, that has been brought before my notice during the present year.

This machine is not complicated, when the various duties that it has to perform are taken into consideration; but its construction is such, and its parts are so numerous, that a clear description of it without drawings is almost impossible; suffice it to say, that the wire is first presented to nippers or shears, which cut off a length sufficient for a single link. One-half of this length is then bent into an annular figure, leaving the other half still unbent and projecting from the ring.

Other mechanism then approaches, seizes the unbent portion and forms it into another ring, a plane passing through which is perpendicular to a similar plane passing through the first named ring. A link, technically termed a jack-chain link, is thus completed. The last named mechanism then retires, leaving the link still held fast by the first set of bending machinery, which in its turn moves backwards, carrying and holding the finished link in such position, that the succeeding length of wire is fed through the last formed ring of the link. These operations are repeated in succession, and the finished chain drops in a stream from the bed plate of the machine.

Such chains are employed for chain pumps for household purposes, and are furnished so cheaply, that pumps constructed with them, and of sufficient size for ordinary wells are furnished complete for about 15 to 20cts. a foot.

Patents have likewise been granted for self-acting feed gear, for drilling and boring machines, for a method of punching sheet metal as it passes between rollers, for a machine for making eyelets, and for improvements in the machinery for making wrought-iron car wheels.

A machine or rather a series of machines for making four sided or harness buckles, and one for shaping the circular cutters or burrs, which are used to form the teeth of small gearing, have also served as the basis of patents.

Two couplings, one for hose, and the other for small metallic pipe, have been patented. In the latter device the pipes are cast without either flange or socket; a ring is attached to, and surrounds one of the pipes at a short distance from its extremity. Over the end of this pipe and projecting beyond it, with its larger end abutting against the before named ring, is slipped a sleeve of soft metal the exterior of which is the frustum of a cone; over this sleeve is adapted another of hard metal closely fitting the exterior of the former one. The end of the other joint of pipe is now inserted into the projecting end of the soft metal sleeve, until it abuts against the end of the first named joint. The hard metal sleeve is then driven by a hammer over the soft one, and towards it, the larger end thus compressing it firmly against the periphery, and between the joints of the pipes.

This coupling is cheap, simple, secure, and easily attached and detached.

Two patents have been issued for improvements in lead pipe machines; the novelty in the one consisting in a method of cooling or setting the lead in



the cylinder before it is forced through the dies ; and the other depending for its patentability upon a peculiar shape of both core and die. Certain minor improvements in the process for making copper pipe without a seam have also been patented.

In the subdivision of this class, under which are examined applications for patents in nail and screw machinery, many patents have been granted ; among which are two for cutting the threads of wood screws, and one for nicking the blanks. The improvements in these machines would appear trivial, if not valueless, to those unacquainted with the fact that apparently slight differences produce important changes in the action of machines, which are required to perform such nice and accurate work as these execute. To those who have traced step by step the improvements in such machinery, which have resulted in the production of the deep threaded, highly finished American screw, which has taken the place of the rough imported article, but little if any superior to a nail, the improvements serving as the basis of these patents, will present themselves as important inventions.

The nail machines present no very important changes or improvements. One of the two patented machines, for feeding nail plates to the cut nail machine, deserves special notice. It has long been a desideratum to contrive some apparatus which should take the place of the nailor, as he is now termed, who feeds into the jaws of the machine, the heated iron plate, lifting it upwards, drawing it backwards, turning it half round, and advancing it again, each time that the machine makes a nail. These mechanics, by long practice, become so expert as to repeat this set of motions 300 times every minute. None of the many mechanical feeders that have been contrived, have answered in practice. The one here noticed, carries the nail plate through all the motions above cited, and is comparatively simple ; as far as can be determined by examination, it appears to approach much nearer to the desideratum than those which have preceded it ; whether or not this opinion be a correct one, practice alone can decide.

Several locks and bolts, sash fasteners, sash stoppers, door springs, and other apparatus appertaining to the closing, opening or securing of windows, doors, blinds and shutters, have been patented. Among the former is a very ingenious bank lock, numerous in its parts, but not complicated, and affording, as it would appear, sure protection against the skill of the pick-lock, or the destructive force of crow bars or gunpowder.

Several patents have been issued for machines for cutting and bending sheet metal, for making candle moulds, tin tubing, and cylindrical or conical boxes. These machines present many features of novelty, important when the great number of such articles that are annually manufactured, is considered, and two of them exhibit decidedly new devices for bending up the sides of cups, and such articles, from their bottoms.

A patent has been granted for a machine for beveling the surfaces of washers, clinch-rings, and circular metallic disks, in which a series of small rollers are located in, and project from the inner surface of a hub or drum, with their axes nearly parallel to the axes of the drum.

Revolution is communicated to the drum, and the small rollers act in succession upon the surface of such disks as may be presented to them, a revolving motion being also given to the disk. By this arrangement, the edges of the disk are drawn out and beveled, as they would be by drawing blows of a hammer, but in a more regular manner.

A machine which the inventor confidently asserts will supersede manual la-



bor, as employed for beating gold into leaves, has also been patented. The gold in sheets, and protected by animal membrane, as is usual, is adjusted in layers within a frame which is supported by a marble slab. A trip-hammer, worked by machinery, beats upon the pile, which, in its enclosing frame, is moved hither and thither, and back and forth, under the hammer, by means of cams and levers.

The idea is not a new one; machines of a similar character having been long since employed in France, and I believe abandoned. The claims, therefore, rest upon the particular devices employed by the inventors, to give the requisite motions to the bundle of leaves.

Handles which are adjustable to many auger shanks, and can easily be attached to, or detached from them, have been patented; so also have been improvements in machinery for grinding twisted knives; devices for regulating the parallelism of vice jaws; modifications of the sliding wrench, and a machine for making horse shoes.

### STEAM ENGINES.

Of the contrivances examined under this head, about thirty have been patented. Comparatively few applications have been presented, describing improvements in rotary engines, and none of them have been patented. An arrangement of two double acting cylinders, connected to the same shaft, through the intervention of rock shafts, arms, and connecting rods, located with respect to each other, in a peculiar manner, has some claims to notice. The result of the arrangement is such, that the main or driving shaft, makes two complete revolutions to each full stroke of the pistons, and this, without the intervention of cog wheels, drums and belts, or the other usual devices for changing the velocity of rotary motion. The engine is described, as applied to the driving of screw propellers, and is intended to put an end to the noise, and obviate the various other inconveniences resulting from the employment of gearing, or its equivalents, on ship board.

*Boilers.*—Five patents have been granted for improvements in boilers. Two of these describe modifications of that form of boiler, in which the water is contained inside of tubes, and the flame acts upon their outer surface. The outside shell of either of them may be made in any of the usual forms; so also may be constructed, the fire boxes and water legs, from the former of which, towards the chimney, extends a large rectangular flue, surrounded, or nearly so, by water spaces, the upper one of which is, as usual, in connection with the steam dome. In one of them a series of tubes is attached to the water space farthest from the fire. These tubes extend along the flue, rising slightly as they advance, until they reach the fire box; there they are bent gradually upwards, until they meet, and are attached to the crown sheet. In the other, the tubes are attached to the water space, and proceed from it in the same manner, but when they arrive at the fire box, are connected with a depending water space or spaces, which hang down from the crown sheet. The former depends for its novelty, upon combining in one boiler, the water spaces, the flue, and the bent tubes peculiarly located. The latter upon the peculiar manner in which the tubes in the flue are connected to the depending water space. The former has the advantage that the tubes are not liable to be broken by expansion or contraction, the curve acting as a spring; the latter possesses superior facilities for repair when any of the tubes have become injured. Both of them, it is believed, will cause the water to circulate more completely than it does in other boilers of the same species. The former



boiler has been actually employed on a locomotive fitted for burning anthracite coal, and is reported to have fully realized the expectations of its inventor; based not only upon the features above described, but upon other and minor improvements, upon which claims are granted.

Another of these boilers is specially adapted to the use of locomotives, working heavy grades, and in connection with it are patented certain improvements in the engines.

Several devices for indicating want of water, for registering the action of the firemen, etc., have been patented. One of these consists in attaching a rope of felt to either side of the shell, which is tightly stretched in such a manner, that it shall be in contact with the upper sides of the ordinary return flues. To this rope is attached a rod which communicates with bells, cocks, &c. When the water falls below the top of the flues, the felt rope parts from the action of the increased heat, the rod attached to it is free to be dragged upwards by a weight, and motion is thus communicated to the bells, cocks, and other appendages, which at the same time warn the engineer, and act of themselves to avert the impending danger.

Two spark arresters have been patented, and also an ingenious arrangement of mechanical devices, by which locomotive engines can be reversed, and the lead changed at the same time; only one set of eccentrics being employed, and the change being effected by the movement of a single hand lever.

Two improvements in the surface condenser are worthy of notice; in one of these a receiving vessel for the exhaust steam and the water resulting from the condensation of the same, is combined with the condenser proper in such manner, that a considerable quantity of the heat contained in any one portion of exhaust steam, is absorbed by the water which has resulted from the condensation of a previous portion of the same. Hotter water is thus supplied to the boilers, and a smaller quantity of fuel is required to evaporate an equal bulk of water.

The other condenser has for its object, to relieve the tubes in which the steam is condensed from pressure; thus obviating one of the great practical difficulties incident to the use of the condenser, familiarly known as Hall's. The tubes in this latter condenser contain exhaust steam and water, resulting from its condensation; their interior surface is in vacuo or nearly so: their exterior is surrounded by a constantly changing body of cold water, which presses upon the tubes, tending to collapse them, with a force due not only to the atmospheric pressure, but to the height of the column of fluid. These tubes are of small size, and their collective length in some steamers is more than a mile; there are consequently many joints, and these are liable to be broken by unequal expansion and contraction, or by the straining of the vessel. When a leak occurs, the cold water rushes with great force to the interior of the tubes, and a small leak is sufficient as it is technically termed, to drown the condenser, filling the tubes to such an extent with water, as to forbid access to the exhaust steam, and rendering the condenser useless. To obviate this difficulty, and to render practicable the employment of thin tubes, this patentee originated the idea of admitting the water to the outside of the tubes in such a manner, that in one of his arrangements they should be exposed on their exteriors to the pressure due to the height of the water only; that in the other arrangement, the pressure on both sides of the tubes should be exactly equal, and leakage in consequence, produce no evil whatever.

In this last arrangement, the case containing the tubes is air tight and sufficiently strong to resist atmospheric pressure; cold water is admitted to the



top of it, and falls in a continuous shower through a perforated plate upon the cluster of tubes, cooling their surfaces, and condensing the steam within them; as it collects at the bottom it falls by gravity into the well of a pump, which latter lifts out the water. Openings are made through the tubes, connecting the space outside with that inside of them, and thus an absolute uniformity of vacuum in the two spaces is maintained. This condenser has been in actual use for several months; report speaks highly of its performance, and it is stated that it is as little liable to injury as the ordinary injection condenser, while it at the same time returns back to the boiler the steam condensed and unmixed with salt or impure water as is the case in Hall's condenser.

An improvement in packing for pistons, in which soft and hard alloys are employed, and an arrangement by which the inventor believes, that in high pressure engines a portion of the escaping steam may be returned to the working side of the piston, and this without increased pressure on the other side, have also been patented; so likewise have been several modifications of valves and valve gear, and of cut-offs, as applied to puppet-valves. In one of these latter, the toe which actuates the lifter is free to turn on the rock shaft during certain portions of the stroke, being clutched fast to it at the proper time for raising the valve, and disconnected when it is necessary to drop the same, by means of self-acting machinery, which can be so regulated, as to permit the valve to drop at any required time.

### NAVIGATION AND MARITIME IMPLEMENTS.

In this class, some six and twenty patents have been granted, among which is one for a peculiar form of vessel, scow bottomed with keels at the sides projecting below the bottom, and below the water line at both bow and stern. By such a form, a wedge as it were of air with its edge toward the vessel is enclosed at the bow, by the keel, by that portion of the bottom which projects over the water, and by the surface of the water itself. As the vessel is forced onwards, and waves strike in this wedge shaped space, each one in its turn forces a quantity of air under the bottom, and below the surface of the water; this air is retained in contact with the same until it makes its way out astern, being prevented from issuing at the sides by the keels before cited. A patent was some years since granted, for applying air to the bottom of vessels: thus, in fact, supporting them on a thin layer of air, and alleviating the friction arising from the passage of water along the outside planking; which friction has of late years been discovered to form an important element among the resistances which oppose the progress of vessels. A vessel built on this better plan in which the air is discharged under the bottom by powerful pumps, is now in actual use in the harbor of New York, and with fair success. The patent granted the present year, has been presented as an improvement on this plan, and the inventor states that his peculiar model will enable him to dispense, not only with the pumps, but with the power necessary to work them.

An arrangement of two flexible bars connected to each other, and to a rigid bar between them by means of cross pieces, which are free to slide on the rigid bar, and can be clamped to it at any required point, has been patented. The whole apparatus constitutes a rule, the outer edges of which can be made to assume many different curves. Its object is to save the wood and labor employed in making the patterns or moulds, from which timbers for vessels are cut. The rule is set to the chalk lines on the laying down floor, and the position of the cross pieces with respect to the rigid bar is noted and marked;



it is then set to the lines representing another timber, and so on for any convenient number. The rule is then carried to the yard, re-set by the marks in its previous positions, and the outline of its edges marked on various sticks of timber.

Patents have been granted for various improvements upon submerged propellers; for improvements in the method of propelling vessels in shallow water, by means of setting poles acted upon by machinery; for a method of arranging and operating swinging buckets for paddle wheels; and for an improved apparatus for indicating the depth of water in ships' holds. Several improvements in the gun harpoon have been patented, some of which promise to produce important practical results. A curious piece of machinery for regulating the trim of steamboats, consisting of an immense rocker running athwart ship, which supports a railway on which a chain box is free to move, has been patented. The machine appears to merit praise, rather from its ingenuity and originality, than from important advantages to be obtained by its employment.

An improvement in the truss for sustaining ships' yards; another in the method of attaching grummetts to sails, and certain modifications in the deep sea diving vessel, have been protected by patents. A number of improvements in that class of steering apparatus, in which ropes and pulleys are dispensed with, cogs, screws, shanks, and cranks taking their place, have been patented; so also have been improvements in the pumping windlass, and an improved method of carrying ships over the bars which usually obstruct the mouths of the rivers and estuaries of our coast. The latter process consists in supporting the ship by an apparatus differing from the ordinary camels, chiefly in the fact that it is provided with a bow, connecting together the camels located on each side of the vessel, which not only renders easier the passage of the machine through the water, but prevents the sea from dashing between the sides of the vessel and the camel, causing them to change their relative location, and strike violently against each other to the imminent danger of both the vessel and its supporters.

## CIVIL ENGINEERING AND ARCHITECTURE.

In the wide range of subjects examined under this head, about 28 patents have been granted.

*Bridges.*—Certain improvements in the arrangement of arches and tension rods, the feet of such arches resting on a long girder, and abutting against each other, while the feet of a second series of arches rest on the same girder, at points vertically beneath the crowns of the first set of arches, and the tension rods extending from the arches to the girder in lines radial to each arch, have been patented. A compound arched girder in which the arch or bow has, as is usual, a metallic string or tension rod, which rod—and here consists the novelty—is not attached to the feet of the arch, but is carried entirely over the exterior of the same, and resting upon, but not fastened to its periphery, has been patented. By this arrangement, it is said that the arch is prevented from rising at any one point, when pressed by a load unequally distributed upon it.

Several excavators have been patented, some of which are ingenious, but present no striking novelties; so also have been improvements in the method of fastening and forming the frame and filling of iron houses; improvements in window sash and shutters, in mantel pieces, canal gates, and stump extractors.



A process for forming embankments, and filling depressions in the earth's surface, through the agency of streams of water, has been patented, and likewise a method of sinking hollow piles, coffer dams, and other things of like character, by means of creating a vacuum therein, which causes the sand, mud, or shingle to rise within them, and the piles to descend. The process is the invention of a foreigner, was patented by him in England, some years since, and is reported to have been employed with great success in obtaining foundations in the hard sand banks found in the vicinity of the coast of that country.

An improvement in the form of railroad bars, rendering them applicable, not only to car wheels, but at the same time, to the use of those of ordinary carriages, has been patented. These rails are well fitted for being laid down in streets, and it is believed that they will obviate many, if not all the difficulties that have hitherto prevented the employment of rails in the great thoroughfares of our towns. A wrought iron railroad chair, the merits of which consist in the cheapness with which it can be manufactured, and in the iron being bent in such a manner as not to injure its strength, has been patented; and with certain improvements on the method of making cornices, and in the arrangement of inverted arches in bridge trusses, completes the list of such inventions as have been patented in the class under discussion.

#### FIRE ARMS, IMPLEMENTS OF WAR, &c.

Similar causes to those which led to a diminution of the numbers of the gold washers, presented to this office for examination, have acted upon the minds of those engaged in the manufacture or improvement of fire arms, and but fifteen patents have been granted during the past year in this class. Two of these are for improvements in the sliding piston breech gun, one of them being for a method of moving and holding the piston, and the other for certain apparatus for preventing accidental explosion of the charge, while the operation of loading is proceeding.

Several patents have been granted for modifications of those arms familiarly known as Cochrane's and Colt's.

Two of the latter have been issued to the original inventor, one of them being for certain improvements in the form of the locking notches of the revolving breech, which prevents any one chamber of the same form being thrown past the axial line of the barrel, and for arrangements rendering it impossible for the charge to explode when the pistol receives a violent fall or jar. The other consists in permitting the spindle on which the cylinder revolves to pass only partially through the hole in the latter, and in closing up that end of the same, which is nearest to the barrel. The improvements claimed under both patents, will remedy certain defects of the pistol, as at present manufactured, and the one last noticed is believed to be especially important, as it prevents all smoke, dirt, small pieces of lead, &c., from entering between the spindle and the cylinder, and obstructing, if not entirely preventing its revolution.

Patents have been granted for several improvements in that class of locks in which the hammer is raised and discharged by the same trigger. One of these is based upon such an arrangement of the parts, that one pull cocks the lock, and leaves all the parts held in position, as is an ordinary lock when cocked; a second pull of the same trigger, but requiring much less force, will then discharge the piece. Two advantages result from this arrangement,



when applied to fire arms with revolving barrels ; one being that the arm is not thrown out of the line of aim by the violent pull on the trigger in the act of discharging ; the other that the barrel is at rest before it is discharged, and the ball has only the motion derived from the explosive force of the powder, and not the compound motion derived both from it and from the revolution of the barrel, as is usually the case.

Improvements in the method of revolving the travelling hammer noticed in last year's report ; in the method of forging rifle barrels, and in the apparatus for giving increasing twist to the grooves in the same, have been patented.

An ingenious combination and arrangement of the two well known machines for forming and charging percussion caps, has been patented, and in connection therewith, certain improvements in the feeding and carrying apparatus appertaining to the same machines. By these improvements, caps finished and charged, are delivered from the machine, which is supplied merely with the copper in sheets, and with percussion powder. No previous slitting of the sheet is required, no sorting of the caps previous to charging them.

### GENERAL MISCELLANEOUS.

In this class only five patents have been granted, and these are based upon improvements in traps, in apparatus for harvesting ice, and upon certain modifications of machines for removing the contents of sinks and privies. One of the former is based upon a curious arrangement of mirrors, by which is reflected to the entering rat, not only his own image, but those of the rats already caught, and all of them in such a position that they appear to be striving which shall first secure the bait. The question whether rats are animated by the passions of larger animals, and are urged by rivalry or emulation, must be determined by those more skilled in natural history than myself. If they decide in the affirmative, the trap here noticed will be as productive a source of danger to the rats, as it has been of amusement to those to whose attention has been brought the certainly very new and odd idea of the inventor.

This description closes my annual brief enumeration of machines, apparatus, processes, and articles patented during the year past ; and in conclusion, I must remark, as heretofore, that a full and complete digest of inventions thus patented, would be of use, not only to the inventor, but to the office and the public, and express the hope that in future we may either have ourselves a sufficiency of time to make the same, or that the preparation of such a work may be confided to some competent officer.

All of which is respectfully submitted.

HENRY B. RENWICK,

*Examiner.*

Hon. THOMAS EWBANK,

*Commissioner of Patents.*



SIR:—In accordance with your instructions, I have the honor to submit a report of the history and present condition of the business of the office committed to my charge during the past year.

In my report for the year 1849, I gave as the number of cases received at my desk, during the year, 463. Besides these, there were upon my desk 180 cases, the arrears of 1848. All of these were acted on during the year 1849; so that at the commencement of 1850, I had no cases upon my desk that had not been examined. During the year 1850, there have been received at my desk 539 cases, only 497 of which, have been disposed of, leaving on hand 42 applications unexamined. It might seem singular without explanations, that 643 applications should have been examined by me in 1849, and only 497 in 1850; and I am the more anxious to give this explanation, because it illustrates an important principle. It will be remembered, that the honorable Commissioner of Patents, toward the close of the year 1849, expressed great anxiety that the arrears of cases on the desks of the examiners should be disposed of, if possible, at the close of the year. To meet this desire, an unusual amount of labor, both mental and physical, was accomplished by all the examiners on the work before them, and most of them brought up the business at the close of the year, so that there were but few cases in arrears. The business of my own desk was reported as finished up to 1850. But as it generally happens in work done hastily, so it was here. Much of the business had to be reviewed and re-examined, and the correspondence growing out of it, and the delays resulting from it, showed conclusively that hasty examinations of applications for patents, like hasty legislation, are productive of great evils and of little or no good. For these reasons I have examined fewer cases in 1850, than I did in 1849. But I have the gratification of feeling and of knowing that the work has been done on a more solid and broader foundation.

There will be fewer cases calling for re-examination in the coming year, than there have been in that which is past. This remark made of my own desk, it is believed, applies equally to the desks of the other examiners: showing as it is believed it does, that the business of examining patents was never done better than at the present time.

The classes exclusively under my charge at the present time, are the following:

1. Agriculture; 2. Chemistry; 3. Household Furniture; 4. Wearing Apparel; 5. Leather.

This last I also examined until April 1850, when that class was transferred to Dr. Page; consequently all of the cases in this class acted on previous to the transfer will be reported by me.

The class of *Agriculture*, embraces all the instruments used in cultivating the ground, and in collecting and preparing its products.

*Chemistry*, embraces chemical processes, apparatus for processes, and compositions of matter.

*Household Furniture*, includes machines and implements for domestic purposes.

*Leather*, embraces all operations in tanning and dressing leather, with the tools and machines used for such purposes; also the manufacture of leather into boots, shoes, saddles, and harness, and all other articles, usually made of leather.



*Wearing Apparel*, also embraces articles for the toilet, with the construction of the implements and machines used for their manufacture.

As before stated, 497 cases have been examined out of the cases referred to me during the past year, besides which, a large amount of pending applications from the preceding year have been disposed of, by being patented or withdrawn, or are still pending. It is, therefore, scarcely possible to give even a clue to the amount of work done on pending applications. The number of actions at my desk during the year, on new and old cases still pending, is more than a thousand. In exact number it is 1029. Now out of the 1029 actions recorded on my books, 240 were examinations where the cases were ordered to issue, 313 were first rejections, 90 were second or third rejections. The remaining actions, being 375, are on cases that have been withdrawn, or are still pending.

Of the applications which have been ordered to issue, 230 are patents, 7 re-issues, 2 extensions, and 1 additional improvement.

*Character of the Inventions as compared with those of 1849.*—It is a fact worthy of remark, that the progress of invention amongst mankind is by no means uniform. Sometimes a new field of invention is opened and a galaxy of inventors swarm about it to develop the hidden treasures. This principle is illustrated in the multitude of inventions that followed the cotton gin, the steam engine, and the electric telegraph. And the same principle is carried out in all the smaller details of the application of science to the useful arts.

The plough clevis is a very old and well known instrument, and is constructed with a vertical, and a right and left movement, so as to vary the width or the depth of the furrow, or both, as may be desired. After the different devices for doing this, had been exhausted, inventors began to look for substitutes for the clevis. One of the first of these was the plough beam, so constructed as to turn on the standard as a pivot, and the end attached to the handles by means of a horizontal graduated arc for varying the width of the furrow, and a vertical arc for varying its depth. When the various modifications of devices for accomplishing this result seemed to be exhausted, the rear end of the beam was made the pivot or centre of motion, and the beam caused to vibrate to the right or to the left, on the standard, by means of a slot in the beam of sufficient length to admit of the motion. A vertical motion of the beam through which the standard passes is accomplished in the same general way, &c.

During the year 1849, several patents among my classes opened new and important fields of invention, which were noticed in my report for last year. The present report, if it presents less of brilliant discovery or invention, embraces much that is useful, and performs an important part in the progress of general improvement.

In reviewing the several classes of my work for the year 1850, and comparing the inventions with those of 1849, I find a greater uniformity than was anticipated. Agriculture, which embraces nearly half of the cases presented at my desk, included in 1849, 117 issues, and the same number were issued in 1850.

The following tabular view will show a comparative representation of the cases patented in the last two years in my classes.

AGRICULTURE.—Cases patented in	1849,	1850.
Churn and Butterworkers	10	13
Ploughs	15	13
Cultivators	6	2
Seed Planters	20	27



	Cases patented in 1849,	1850
Rakes . . . . .	4	6
Harvesting Machines . . . . .	15	15
Thrashing and Grain Separators . . . . .	9	5
Hullers and Smut Machines . . . . .	8	8
Winnowing Machines . . . . .	9	5
Corn Shellers . . . . .	7	3
Straw Cutters . . . . .	5	10
Bee Hives . . . . .	5	3
Miscellaneous . . . . .	4	7
	<hr/> 117	<hr/> 117

## CHEMISTRY.

Patents granted . . . . .	44	53
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## LEATHER.\*

Boots and Shoes . . . . .	7	0
Tanning and Finishing Leather . . . . .	5	3
Saddles and Harness . . . . .	9	6
Miscellaneous . . . . .	0	5
	<hr/> 21	<hr/> 14

## HOUSEHOLD FURNITURE.

Washing Machines . . . . .	6	3
Cutters of Meat and Vegetables . . . . .	7	4
Bedsteads and Fastenings . . . . .	19	13
Tables and Chairs . . . . .	13	3
Miscellaneous, including Refrigerators . . . . .	10	20
	<hr/> 55	<hr/> 43

## WEARING APPAREL.

Patents granted . . . . .	9	11
Total No. of patents, re-issues, and additional improvements	246	238
Extensions . . . . .		2
	<hr/> 246	<hr/> 240

## CLASS 1.—AGRICULTURE.

Having stated the number of patents granted in the several classes referred to me, following the practice of the office for the last ten years, I should proceed to notice the most important inventions that have been examined at my desk during the past year. Commencing with the minor divisions of agriculture, I shall first notice

*Churns.*—Of the 13 patents granted, very little can be said of the merit of the inventions which they set forth. They are not entitled to any special notice, except to say, they are detailed variations in the modes of agitating fluids. I shall notice two of these. The first is what is called an *atmospheric churn*, consisting of an upright cylinder with a rotary dasher, which gives to the cream a rapid rotary current; causing a current of air to be drawn down through a series of vertical pipes bent at the bottom at right angles, and

\* For the remaining patents in this class, see Page's Report.



in the direction of the current of liquid put in motion by the rotation of the dasher. Claims the combination of the dasher and the tubes, for discharging air beneath the surface of the cream.

Another patent was granted for an atmospheric churn, consisting of two vertical cylinders, and an intermediate air chamber communicating with the cylinders by a grated opening or passage—the two cylinders are supplied each with a plunger, and the plungers are moved from the ends of a working beam not unlike the pistons or plungers of a fire engine. The effect produced, is the agitation of the cream by forcing it alternately from one cylinder into the air chamber, and thence into the other cylinder and then back again, by reversing the motion of the working beam.

*Ploughs.*—Thirteen patents have been granted on this division of agriculture. Three of these for improvements in the plough clevis, three for devices for cleaning the various matters that are liable to adhere to ploughs as grass and stubble; two gang ploughs, two hill side ploughs, one subsoil, one coulter fastening, and one spring beam plough. None of these patents, except perhaps the last, requires any remarks—the subject having been so nearly exhausted, that there is little room for invention. The construction of a *plough beam*, so as to render it flexible, is believed to be a new device, and on the ground of obtaining the result of avoiding the breaking of the plough when striking a fast rock or stump by the spring of the beam, the patent was granted.

*Cultivators.*—Two patents have been granted under this division, neither of which seems to present any remarkable novelty worthy of notice.

*Seed Planters.*—Twenty-seven patents have been granted, most of which are for minor points of novelty, and require no notice from the examiner. The following may receive a passing notice.

A patent was granted for a *seed planting barrow*. In this the gist of the invention lies in the device for receiving and transmitting, or distributing the seed. It is so constructed, that the reciprocating, semi-rotating, horizontal seeding disk, takes the seed from the hopper above it into its seed measuring cups, in which cups the seed is carried around on the surface of the underlying plate, until it is brought over a hole in the said under plate through which it falls into the furrow. The patentee claims the devices for moving the seed disk in combination with the disk itself.

A patent was granted for the construction of a *drill tooth*, so that when it should meet with a fast rock or stump, or other fixed obstruction; it might disengage itself without the danger of being broken. Devices for accomplishing this result are rather common within the last year or two. The tooth in this case, is so made as to be hung by a pivot at its top, and to be grasped at its front and middle part by the lips of a pair of tongs, the jaws of which project horizontally backwards, and hold the tooth with sufficient force to resist the action of ordinary soils; but if the drill tooth meets with any fast obstruction, it pulls away from the grip of the tongs, and swings back on its pivot, and when it has past the obstruction, may be pressed between the jaws of the tongs by the attendant.

A patent was also granted for a *planting cylinder*, in which the invention consists in the device for varying the size of the seed cavities in its periphery. This is done by means of an arrangement of radial bars or rods like the spokes of wheels running towards the periphery, and extending into the bottoms of the seed cavities, and thus filling them up in whole or in part only. The radial arms or rods are moved in mortised grooves outward and



inward, by means of cams working in screw thread depressions. The cylinder being composed of two short cylinders or disks on the same shaft, one having the cams and the other the screw thread depressions, so that by rotating the inner faces of the disks upon each other, the radial arms are advanced or retarded, so as to vary the size of the cavities in the seeding rollers.

A patent was granted for a *seed distributing apparatus*, in which the invention consists in the use of cogs of wheels having their peripheries pass through the hopper of a seed planter, and each cog takes up and carries over a small quantity of seed and deposits it in the seed drills; there being one drill tooth for each cog wheel.

Another patent was granted, the gist of which consists in the arrangement and in the working of the seed valves in the bottom of the hopper, in combination within one of the sides of the hopper, so made as to slide up and down, and thus vary the capacity of the seed measuring space, contained between the upper and lower slide valves, by causing the valves to recede from or approximate towards each other. In sowing seed, the two series of valves move alternately, the upper being opened first, lets down its charge upon the lower one, while the latter is yet shut, and as soon as the upper one is closed, the lower one is opened, and the seed falls into the furrow. The upper and lower valves, each is worked by a separate set of cams on the driving axle.

*Cart for Spreading Manure.*—A patent was granted for this apparatus, consisting of the sides and ends of a manure cart-body on a pair of wheels, on the axle of which the body is capable of being slided rearward, or run back on rollers for the purpose of the discharge of its contents. The bottom part of the said cart-body or box is made to consist of an endless apron on a series of rollers, the forward end of the apron is made fast to the forward end of the box, while the rear end of the apron winds up on a roller situate underneath and near the rear end of the cart. It discharges the contents as the body of the cart moves or slides backward. The manure is spread by winding up the rear end of the apron on the under roller, which process brings the contents slowly backward, and distributes them broad cast or otherwise at the rear of the cart body.

*Harvesters.*—Under this division, fifteen patents have been granted. For the last two years much attention has been given to this class of agricultural machines. At first, they were confined to the cutting of grain chiefly, then to grain and grass, and now they have been extended to almost every herbaceous growth of the soil. Thus we have grain and grass harvesters, corn harvesters, cornstalk harvesters, cotton harvesters, cotton stalk harvesters, cloverhead harvesters, hemp harvesters, &c. I shall notice several of these, as they present something of interest to prairie farmers, especially.

The first machine which I shall mention in this class, is a *machine to harvest cotton stalks* in the field. It is a machine having two horizontal shafts, running from side to side. The upper and forward one has radial knives or beaters, which rotate rapidly, and beat down the stalks, while the rear shaft is supplied with radial longitudinal knife edges extending from side to side, and as the blades come down they chop the stalks in pieces.

The second machine noticed under this division, is a *grain and grass harvester*, presenting two principal points of invention. First; the cutters, which consist of two horizontal saw blades, lying flat upon each other, with the teeth looking forwards, and vibrating upon each other as the face of the saws is pushed forward against the standing grass. The peculiarity of these teeth consists in their being made concave on their inner faces, so that when



they slide past each other, they cut somewhat on the scissors' principle, and are, to some extent, self-sharpening. Second; there are what are called cyma-reversa fingers, working in combination with certain rake teeth, designed to hold the charge while the fingers take it and deposit it upon the ground.

The third machine of this division is a *corn stalk harvester*, the frame of which resembles a low three wheeled truck, and bearing upon its upper surface, near its middle part, two broad metallic disks, armed with teeth on their peripheries, which teeth slightly overlap each other, and are capable of seizing and holding within their grasp, any herbaceous matter, and as the machine moves forward, to tear it up by the roots. The meeting of these teeth is near the central part of the machine, anterior to which the space is perfectly clear, so that when the machine is driven over a row of the corn stalks, the latter are successively brought against the teeth of the metallic disks, and drawn out of, and deposited upon the ground.

The fourth machine is an ingenious contrivance for distributing the cut grain of a harvester into suitable parcels for bundles, by the weight of the grain. It is called a *grain binder*. It consists of a self-regulating rotary cylinder, mounted on the rear end or extreme right side of the machine, and having its axle parallel with the rear end of the machine. This cylinder is supplied with catches and springs, and so arranged that when a certain weight of grain is received into one of its three compartments, it performs a third part of a revolution, and deposits the amount received for a bundle, while the next compartment of the cylinder is being charged for a second bundle, and so on.

One patent has been granted for a *machine to harvest hemp*, a prominent peculiarity of which consists in the method of severing the stalk, by means of an oblique chop stroke of the cutters falling obliquely across the spaces between the fingers, and upon the edge of the finger on the further extremity of the finger space; the oblique stroke being given by the shaft on which all the cutters are arranged, which shaft is semi-rotated in screw thread bearings, so that the shaft in so rotating and re-rotating as to raise and depress the cutters, should, in performing this operation, give the oblique motion which severs the stalk, as set forth.

Two machines adapted to harvest maize, have been patented. The first of these contains a thresher to husk and shell the grain. The harvester consists of a machine, in its general arrangement not unlike a clover head harvester. But it has a series of pairs of rollers, one pair between every pair of teeth, to seize the stalks and pull them downwards, until the ear is drawn against the tops of the fingers by which the ear is severed from the stalk. The ear then rolls down an inclined plane to the thresher. A *second machine for harvesting maize or grain* has also been patented. The gist of this invention consists in the construction of the grain reel, made with rows of fingers, projecting radially, and rotating over or through the standing grain. The stalks being received between the fingers, the ears are pulled off and deposited on an inclined endless apron.

A *Grass Harvester* of a novel construction has been patented, which it will be difficult to describe without the aid of drawings. Some idea of its general character, however, may be formed, by supposing a flat washer-like ring of metal to be cut out of a sheet of metal, and placing it in a horizontal position. Now place upon its surface, symmetrically, a series of sharp razor blades a few inches apart, having the shank confined to the ring by a screw or rivet, and the ends of the blades projecting beyond the periphery of the ring. If now the ring be rotated, so that the cutting faces of the blades be



forward, and in this state be brought against the standing grass, it is contended by the inventor that the machine will be a successful instrument. The cutting blades are supported in their position by suitable contrivances, and the ring, with its cutters, has also suitable devices for supporting it, and rotating it as the carriage moves forward, which it is unnecessary to refer to here.

*Horse Rakes.*—Only one apparatus under this division is regarded worthy of special notice, although six patents have been granted.

This invention is denominated *a machine for binding grain*. The frame of it resembles the platform of an ordinary harvester, so constructed that curved rake teeth, projecting upward through the floor, and passing across the same from side to side, collect the grain at the opposite side, where it is brought against a curved arm, between which arm and teeth the grain is pressed, and at the same moment another curved finger rises through the floor from behind, to support that half of the bundle, while at the same time, the curved rake teeth, by means of the machinery, fall backward through the floor, and are carried back to the opposite side of the platform, or to the starting place, for a new charge.

The gearing could not be explained without a drawing. The only part required of the attendant with the machine, is to tie the band for each bundle or sheaf.

*Thrashing Machines and Grain Separators.*—Five patents have been granted; two thrashing machines, and three for separating the grain from the straw, or for carrying away the straw after thrashing. I shall notice only one of these, namely, a thrashing cylinder. This cylinder is constructed in short sections or rings, in such manner as to be slipped over a solid cylinder, and made moveable on it, so that when any one section receives a stone or other hard body between the teeth, instead of its breaking out the teeth, the ring will slip round the solid cylinder and thus allow the obstruction to pass through the machine without doing injury.

*Winnowing or Fanning Mills.*—Five patents have been granted; three of these for ordinary fanning mills, none of which present any general interest for their novelty in invention. The points claimed are minor ones.

*Machines for Hulling Grain and Rice, and separating Smut and Dirt.*—Eight patents have been granted; three of these for hulling clover, four for smut machines, and one for separating garlic from wheat. I shall notice three of these machines. The first is for the construction of the basis for setting the teeth on the cylinder of a clover huller, or on the concave of the same. The teeth are first set in a compact sheet of leather, and this fixed upon a basis of cork, for the purpose of rendering the teeth capable of a slight flexibility so as to prevent breaking from the accidental introduction of stones or other foreign bodies.

*A Clover Huller* has been patented; the novelty of which consists in the form and arrangement of the teeth on the concave and on the cylinder. The one (say the cylinder,) has teeth proper of an ellipsoidal form, running between serpentine ribs of alternate expanded and contracted dimensions on the sides, so that the grain between the roughened sides of the ribs and the roughened sides of the teeth, may receive a sufficient amount of friction to clear it of hulls.

*A Garlic Machine* has been patented, for the purpose of separating garlic from wheat or other grain. It consists mainly of a horizontal slatted or ribbed cylinder, between whose ribs or slats the pinion teeth of another cylinder are allowed to mesh, and against which they are pressed by a spring with suffi-



cient force to crush the garlic without injuring the wheat. The garlic is thus mashed and made to work its way out of the machine, through the ends of the cylinder.

*Corn Shellers.*—Three patents have been granted; none of which present sufficient novelty to require special notice. One being to give the ear a screw motion as it is forced through the machine, another feeds the corn between the two contiguous faces of the concave rims of a pair of shelling wheels, another makes his shelling disk answer the double purpose of a sheller and a fly wheel.

*Straw Cutters.*—Ten patents have been granted. Three of these will be noticed—the first belongs to the class of straw machines in which the blade is worked by hand. The point of novelty is in the device of fastening the jointed end of the knife on a spring, so that in working the knife, the slight yield of the spring produces a draw cut in severing the straw.

In the *second* machine noticed in this division, the novelty of the invention consists in so arranging the spirally ribbed feeding rollers and horizontal knife with its edge towards the said rollers, and brought so close to the ribs, that those of the upper roller, cut against the upper edge of the knife, while those of the lower roller cut against the lower edge of the knife; and thus the straw that is fed through, is all cut either by the lower or upper edge of the knife.

Under this division of agriculture, there has been patented a *vegetable cutter*, presenting some novelty worthy of mention. The machine in the general consists of a short cylinder lying or supported on its side, and having its cutting apparatus on the upper part of the cylinder over which the hopper is placed. The two edged knives, which have a reciprocating motion in an arc corresponding with the periphery of the cylinder, are hung on arms attached to each end of the axle of the same, and vibrate across and just above the opening in the bottom of the hopper, and perform a cut with both the forward and back stroke.

*Bee Hives.*—Three patents have been granted; but none of them presents sufficient novelty to require special notice.

*Miscellaneous of Agriculture.*—Seven patents have been granted; one for a *curry comb*, three for *hay forks*, one for stanchions for cattle, one for a machine to fumigate plants, and one for the construction of an ox yoke. Of the last of these the novelty consists in having two staples instead of one, as is common, and placed in the middle. The design of the invention is to enable a weaker or a lighter ox, to draw his end of the yoke equally with a stronger animal. In the common ox yoke, the chain by which the animals draw the load, is attached to the staple in the middle of the yoke. In this improvement there are two staples, each one about three inches from the centre, one on each side of it. The chain leading, say from the plough, is divided twelve or eighteen inches from the yoke, into two branches, one leading each staple; one of the branches has an adjustable device for varying the relative lengths of the branches—by this adjustment, the advantage may be given to the one or other ox, as may be desired.

#### CLASS 4.—CHEMISTRY.

This class contains fifty-three patents, under the following heads:

Manufacturing candles and purifying the materials, . . . . .	5
Preparing manure from animal compound, . . . . .	1
Gas manufacture, . . . . .	3
Manufacture of sugar, . . . . .	3
Manufacture of soap, . . . . .	1



Manufacture of soup bread, . . . . .	1
Distilling alcohol, oils, &c., . . . . .	3
Enameling hollow ware, . . . . .	1
Manufacture of glucose, (grape sugar,) . . . . .	1
Gas metres, . . . . .	2
Manufacture of India rubber, . . . . .	6
Paints, and covering cements, . . . . .	4
Extinguishing fires, (by means of suffocating gases,) . . . . .	1
Preserving vegetable fibre in wood or in cordage, . . . . .	2
Refining and separating gold, . . . . .	3
Grinding rags for paper making . . . . .	1
Parti-coloring yarn, . . . . .	1
Sizing compound, . . . . .	1
Manufacture of stannate of potash and stannate of soda, . . . . .	1
Manufacture of gutta percha, . . . . .	1
Preparing wheat for grinding, . . . . .	1
Preparing sugar cream, for the use of tea and coffee, . . . . .	1
New burning fluid, . . . . .	1
New material for printers' ink, . . . . .	1
Manufacture of comfits, or sugar plums, . . . . .	1
New glazing compound for the laundress, . . . . .	1
Manufacture of alum from the green sand, . . . . .	1
Apparatus for salting meat, . . . . .	1
Machine for filtering oils, . . . . .	1
Manufacture of starch from maize, . . . . .	1
Manufacture of caviar, (an article of food from the roe of the sturgeon,) . . . . .	1

Several of these inventions will be noticed more in detail.

*Water Gas.*—It will be remembered, that in my report for 1849, I noticed somewhat at length the subject then, and still regarded by the community as a prominent novelty of the day, namely, the *water gas*. I gave the outlines of the history of gas making from steam or water, and showed by the references, that the invention was at least twenty years old, and that four or more English patents had been granted for modifications in the manufacture. But as the public mind has been held in a state of feverish excitement by newspaper squibs, promulgating the most astonishing discoveries, from time to time, throughout the last year, on the subject of illuminating gas derived from water or its elements, I deem it proper to make some further remarks respecting it. Water gas is an old and well known invention, and it requires no small share of inventive power to make an improvement that would be valuable to the public. The pale combustible gases, as obtained from steam passed over red hot charcoal, have been more highly charged with carbon, to increase their illuminating power in two ways; the first, by forcing them through highly or finely pulverized charcoal or equivalent carbonaceous matter, and then through scraps of iron at a low red heat, to remove the excess of carbon. The second consists in mingling the pale combustible gas with the vapor of spirits of turpentine, naphtha, or other hydro-carbon, by which the gas is sufficiently carbonized to give the requisite illuminating power. It is stated in the American Year Book of Facts for 1850, that even atmospheric air may in this way be charged with the vapor of any hydro-carbon, so as to render it capable of being used as an illuminating gas. To this second mode of carbonizing combustible gases belongs the invention of Mr. Donovan, patented in England



in 1830, and of Molleras patented in 1834, and the celebrated Paine light of newspaper renown the world over.

A patent has been granted during the past year for a peculiar form of retort for the manufacture of the water gas. It consists of three cylinders cast in one piece of metal, designed to lie horizontally in the furnace, so that the three lie on nearly the same horizontal level; the largest in the middle, and a smaller one on each side. Suppose the spectator to be looking towards the end of the retort, as it lies in its position in the furnace, the small retort on his right is charged with finely pulverized charcoal, the one on his left with scrap iron, and the middle one is charged with anthracite coal or other matters, to increase the amount of decomposing surface. The water or steam is forced into the right hand compartment, and carried along the whole length of this retort through the red hot charcoal, where it takes up a certain amount and thence passes, by means of a small conducting tube, across to the left retort, through the length of which it passes, and deposits its excess of carbon, as alleged by the inventor, and then enters the large retort by means of a short tube at the end nearest the spectator, where it mingles with the rosin, or oil gas generated in the same vessel in the usual manner. The utility of the water gas has not been yet sufficiently tested to enable the public to judge of the cost of this gas, compared with that from coal, rosin, or other well known agents. The inference is pretty strong, that if the twenty years' experience in England, from the time of Michael Donovan's patent to the present, has not introduced the water gas there, it must be because it costs more than it is worth, or else they have not invented the right kind of apparatus for its successful use.

I have been led to make these remarks at greater length than might otherwise be deemed justifiable, from the frequent applications, public and private, made at this office for information respecting the so called Paine patent. No such patent has been granted in the United States. A patent has been granted for an apparatus for generating illuminating gas from asphaltum. The material is introduced into the retort in a semi-cylindrical iron tray, and the tray removed at the end of every charge of four or five hours heating.

*Soup Bread.*—This preparation is made by mixing up with flour, the liquid or soluble parts of meat, reduced by boiling and concentration to a jelly, and forming these materials into dough, which is then rolled out into cakes or loaves, and baked at a low oven heat.

*Glucose, or Grape Sugar.*—An article under this denomination has been patented; it is a process. The sugar found in raisins and in most acid fruits at maturity, belongs to one kind or species, and is distinguished from cane and maple sugar by being not more than half as sweet as the same weight of the former. It was found many years ago, that if starch were suspended in water, slightly acidulated with an acid, and boiled briskly for some ten hours, the starch would be converted into its own weight of a sugar identical with that found in raisins and other fruits, which fruits are acid in the green state; this product is called *glucose*. The patentee has learned by experiment, that if he boils his starch compound at a higher heat than  $212^{\circ}$ , he reduces the time required to finish the process, so that what was before done in ten or twelve hours, may now be done in six or seven. He mixes 25 bushels of corn meal with 150 gallons of water, at the temperature of  $175^{\circ}$ , and adds about 25 pounds of oil of vitriol, and after well stirring the same, adds 50 gallons more of water, and runs the whole into the boiler, lets in steam, and allows the contents to boil under pressure, by adding weight to the safety



valve. He continues the boiling until the tincture of iodine no longer indicates the presence of starch in the material. Chalk is now added, to neutralize the sulphuric acid, and the solution concentrated to crystallize.

*Zinc White, or White Oxide of Zinc*, is now largely used as a substitute for white lead in painting. The great value of white lead as a vehicle for other paints, consists in the fact that the carbonate of lead is soluble, to a certain degree, in oils; it is now found that the same is true of the oxide of zinc, and hence its peculiar fitness for the uses set forth, as a vehicle for paints, and a substitute for white lead. The subject of the patent is the construction of a furnace for oxidizing the metal, arranged with air passages for oxidizing, and reception tubes for collecting the product.

*Sugar*.—A patent has been granted for a process of refining sugar from the beet or cane, which consists in adding to the cane juice, or beet juice, or to the solution of sugar in water, a quantity of baryta, to form the saccharate of baryta, which is removed from the liquor by mechanical means in the state of magma. The baryta is separated by means of carbonic acid gas forced through it; an insoluble carbonate of baryta is formed and precipitated by adding sufficient water, so that the solution of sugar will be of the strength of 30° Baumé, from which it may be concentrated to the state suitable for crystallization in the usual way.

*Draining Sugars*.—This is an improved apparatus on Hurd's machine for draining sugars by centrifugal force, and consists in surrounding the wire gauze cylinder by a steam case, to be supplied with steam, or a fine spray of water, the design of which is to prevent the gumming up of the meshes of the wire gauze, which is liable to occur when the surface of the cylinder is freely exposed to the atmosphere.

*Refining of Gold*.—Three processes have been patented for separating gold from other metals, or from gold sands, only two of which will be noticed here. As this subject is one of great importance, inasmuch as from present appearances, gold is likely to become the chief metallic currency of our land, I deem these processes of sufficient interest to the public, to give them somewhat in detail.

Most of the native gold brought to the mint for refining, contains silver, from which it must be separated before it can be supplied with the uniform proportion of alloy required by law in gold coin. For this purpose, the process now in use throughout the world, is to melt the gold to be refined previous to coining it, with two to three times its weight of silver. It is then granulated and exposed to the action of hot nitric or sulphuric acid, which dissolves out nearly all the silver, both that in the native metal, and that added by the refiner, and thus leaves the gold in nearly a pure state, and ready to receive the necessary portion of alloy required in the gold coin. It will be seen at a glance, that allowing a million of California gold to weigh (53,250) fifty-three thousand two hundred and fifty ounces, or nearly two tons, it would require nearly six tons, or (161,250) one hundred and sixty-one thousand two hundred and fifty ounces of silver, and worth about (\$190,000) one hundred and ninety thousand dollars, to be kept constantly on hand to work it. The desideratum is, therefore, to find some process of working the gold, by which this great outlay of silver may be prevented, and by which greater celerity may be effected; both of these results, the inventors allege, they have obtained.

In the first, the argentiferous gold is converted into the chloride by the action of nascent nitro-muriatic acid generated by the re-action of sulphuric



acid upon a mixture of nitrate of soda and common salt, or by other equivalent means. The silver contained in the native gold, is also converted into the chloride by the same chemical re-action, and it is prevented from incrusting the gold by the more intense affinity, and the agitation produced by a jet of steam which is constantly being forced into it. The gold is next precipitated in the metallic state upon the chloride of silver, by means of pulverized copperas. After washing the precipitate of gold and chloride of silver, the latter is reduced to the metallic state, by the re-action of zinc and dilute sulphuric acid; and subsequently, the silver is dissolved out by means of nitric acid. From the nitrate of silver obtained above, the metal in the pure state is precipitated in the usual way by the re-action of zinc and dilute sulphuric acid.

In the second patent referred to, the design of the invention is to avoid the use of chlorine in the first part of the process. The argentiferous gold is first melted down with zinc or other metal baser than silver, from which alloy the baser metal may be dissolved out by dilute sulphuric or other cheap acid, and the bullion pulverized, or an alloy of great brittleness made, which may be easily crushed or broken down by mechanical means, so as to fit the gold bullion for the direct action of nitric or other acid. The inventor states, that he first mixes the argentiferous gold with twice or three times its weight of zinc, melts and stirs well the alloy, and then granulates the same by pouring it into water. The alloy thus obtained, is next treated in wooden vessels lined with lead, with dilute sulphuric acid, which removes the zinc, and leaves the argentiferous gold in a finely divided pulverulent or spongy state. In this second operation, heat is not required, and but little more sulphuric acid than will be necessary to form the sulphate of zinc.

Third. The argentiferous gold thus reduced to a spongy state, and still containing the silver untouched by the re-agents used, is treated with hot nitric or sulphuric acid, (the sulphate of zinc having been first entirely removed by washing,) by which the silver is entirely removed, and to be obtained in metallic state as in the former process or in usual way. Finally, the operation is finished by cupelling the gold or melting it with such fluxes as borax, nitre, &c., and casting it into bars.

*Alum, process of Manufacturing*, from the "green sand formation" of New Jersey. It consists in igniting the green sand free from lime and magnesia, stirring it in the mean time and exposing it freely to the air, the object of the exposure being to peroxidize the iron contained—care being taken to avoid carrying the heat so high as to fuse the mass and prevent the action of sulphuric acid upon it. It is next treated by sulphuric acid to dissolve out the potash, and the alumina is added in the requisite proportions to form alum.

*Red Oxide of Zinc prepared as a Drier of Paint.*—This ore is procured from Sussex County, N. J., is heated and partially converted into the white oxide, and by this means rendered friable, and the foreign matters are thus easily separated from it. It is then exposed to the action of the oil as other driers.

*Manufacture of India Rubber.*—Two patents for improvements in the manufacture of *India Rubber*, have been granted during the past year, which claim some notice in this place. The first of these, is for the use of the *hyposulphite of zinc*. This salt is prepared in the following manner: In a solution of caustic lime, pot-ash, or other caustic alkali, boil flowers of sulphur until the liquor be saturated, and into this liquid pass sulphurous acid gas by any of the known means for the purpose of obtaining a hyposulphite of the alkaline base. The liquid is allowed to stand and cool, and the clear liquor



is then decanted into a vessel containing a suitable quantity of a saturated solution of the nitrate or other analogous salt of zinc. On mixing these solutions, the zinc is precipitated in a white powder which is regarded as the hyposulphite of zinc. It is then washed on a filter, dried and subsequently ground in a paint mill. Three pounds of this powder is mixed with ten pounds of India rubber, and heated from three to five hours at a temperature of  $260^{\circ}$ ,  $280^{\circ}$ . The rubber, according to the inventor, will be found completely cured or vulcanized, and requires no free sulphur to be used in any part of the process, and no washing with alkali as do the ordinary materials used for vulcanizing. Hence, it is alleged, that this process is adapted to the covering of silks, and other delicate textures, and colored fabrics.

Another patent for a *compound for vulcanizing India rubber*, has been granted, in which the mode of treatment is much the same as the last, and produces the same result. The material is the artificial *bi-sulphuret of zinc*. The inventor claims the use of this composition without the use of sulphur in any part of the process of manufacture, and the washing with alkaline solutions is not required, and is not used in this mode of manufacture.

*Manufacture of Caviar*.—This is a process of preparing the roe of the sturgeon. The process consists in placing the roe in a pickle of salt and water for a time, by which a fermenting action takes place, and the roe rises to the surface of the liquor, while the various foreign matters settle to the bottom, and are in this way easily separated. The roe is then subjected to the process of being mixed, and incorporated with a portion of the oil of the male sturgeon, and is then packed in suitable tin canisters for the market.

*Burning Fluid*.—The ordinary burning fluids are mostly mixtures of spirits of turpentine and common alcohol, or spirits of turpentine alone, under the name of camphine, or chemical oil. To explain the nature of the invention patented, it must be premised that there are known to chemists several kinds of alcohol; 1st. *common alcohol* or spirits of wine; 2d. *amylic alcohol* obtained in the distillation of potatoes, Indian corn, or rye, or other cereal grain, and called *corn oil*, potato oil, essential oil of grain, &c; and 3d. *methylic alcohol*, pyroxylic alcohol, or wood spirits, obtained by the distillation of wood in close vessels. The compound burning fluid claimed herein, consists of a mixture of the amylic alcohol and common rosin, in such proportion that the carbon of the rosin shall neutralize the hydrogen in the alcohol—rules for which mixture are to be found in the specification.

*Manufacture of Starch from Maize*.—The process as stated by the patentee, consists in soaking the grain in water, until it germinates sprouts of a certain length, and then he extracts the starch in the usual way. It is stated by the inventor, that a bushel of corn weighing fifty-six pounds, will yield by this process twenty-eight pounds of starch.

*Distilling Crude Turpentine*, so as to accomplish two processes in one, namely, distilling the turpentine and boiling soap. This is done by mixing the raw turpentine with the requisite quantity of alkali to saponify the rosin at the same time that the spirits are evaporated and passed into a condenser for use; the rosin is thus saponified and prepared for the business of soap making.

*Purifying Gas in the Retort where it is generated*.—A patent has been granted for this device which consists in the mixture of coke and lime in the retort for generating coal gas. The inventor alleges that he increases the quantity as well as the quality of the gas, and saves a considerable amount of matter usually deposited in the purifiers and other parts of the condensing apparatus.



*Preparing Wheat for Grinding.*—The object being to so act on the hull of the grain by a chemical agent, as to render the process of separating it more easy and more perfect. This consists in sprinkling the grain before grinding with a dilute acid, which hardens and stiffens the hull, and thus loosens it, by which process it is readily separated, and as alleged by the inventor, grain so treated is fitted to make better flour.

#### CLASS 17.—HOUSEHOLD FURNITURE.—43 PATENTS.

*Washing Machines.*—Three patents have been granted; but none of them presents any novel features worthy of particular notice.

*Cutters of Meat and Vegetables.*—Four patents have been granted. One for a meat cutter with blades rotating in a circular box; two for sausage stuffers, and one for cutting dried beef. The last of these machines, consists of two blades fixed horizontally upon a small table with a suitable aperture for the cut beef to drop through, and a drawer beneath to receive it. The cutting blades are arranged on the table in front of the operator, in the form of an inverted V, and the beef is pushed by the hands against these blades so as to chip off a thin slice each time.

*Bedsteads and Fastenings.*—Thirteen patents have been granted. One for a bedstead, four for bedstead fastenings, three for sofa-bedsteads, one for an invalid couch, two for spring mattresses, one for a folding cot bedstead, and one for a camp bed. This last is a camp bed or chest, so arranged that when the chest or bureau lets down its top and sides, so as to be opened in the widest way, it constitutes a wide bed, that is, when the front and back are let down—but when the ends are let down it forms a narrow or single bed.

*Chairs and Tables.*—Three patents have been granted. One for a nursery chair, one for a car seat, and one for an extension table.

The first of these claims a passing notice. The principal feature of novelty consists in the removal of the back, and fitting it in front, and drawing out at the same time a slide in the side of the chair, and taking with it one of the arms, which together constitute the end piece and bottom support of the cradle, so that a rocking chair with a high back may be converted into a cradle by the removal and adjustment of the parts herein named.

The point of novelty in the extension table is chiefly confined to the leaf, or leaves, which are constructed of thin plates of metal, having the ends of the leaves bent down, so as to constitute a flange, each individual flange being received into that of its fellow, or vice versa, so that when the leaves are closed up to make a compact table, each leaf of the extensible parts is shut in under or over its fellow, and when drawn out the leaves, edge upon edge, lie over each other like the shingles of a roof, and yet the leaves are so thin that they appear when seen extended, as a plane surface.

*Refrigerators.*—Only one patent has been granted on this division of household furniture, and the novelty is of minor importance.

*Miscellaneous of household furniture* presents nineteen subjects of patent

For kneading dough, . . . . .	1
Furniture castor, . . . . .	1
Frame for drying clothes, . . . . .	1
Clasp for holding down bedclothes, for cradles, &c., . . . . .	1
Rule joint, . . . . .	1
Improved window curtain, (apparatus for,) . . . . .	1



Venetian curtain blind,	1
Construction of a base, or support for a stand,	1
Fly trap,	1
Machine to wash dishes,	1
Quilting frames,	3
Store counter,	1
Bureau drawers,	1
Cracker machine,	1
Machine for pounding beef steaks to make them tender,	1
Fly brush,	1
Machine for cutting and assorting broom corn,	1

Some of these machines merit a more special notice. The machine for *kneading dough* is the combination of a reciprocating breaker or chopping knife, moving vertically, with a reciprocating kneading table, which moves horizontally, and with a motion separate from the other machinery. The table is moved forward and then backward, so as to bring every part of it under the breaker, which latter does not move out of its position.

*A Fly Trap* has been patented of the following construction. It consists of a horizontal cylinder, rotating within a box open above. The upper part of the cylinder with its ribs, projects a little above the body of the box, and has its surface smeared with molasses. On one side of the box, and that side towards which the cylinder rotates, a space is cut away and a glass plate let in, in its stead, which glass plate fits pretty closely to the projecting ribs on the cylinder. The cylinder rotates very slowly, by means of clock work. Flies alight on the upper surface of the cylinder and feed on the saccharine matter while the cylinder rolls slowly forward, and brings the fly behind the glass plate before he is aware, and from which there is no escape. He is gradually carried to the under and dark part of the box, where he is brushed off by machinery moved for this purpose.

*Machine to wash dishes.*—Designed as a substitute for the ordinary hand work. It consists of an oblong, somewhat irregular shaped vessel, generally made of tinned plate metal, and containing on one side a vertical rotating cylindrical frame, to contain the dishes to be washed, and on the other, a horizontal reel formed cylinder, with buckets or dashers on the arms of it, which are designed to dip into the water in the lower part of the vessel, and to dash the same against the dishes in the vertical revolving frame, so that every part of it shall be exposed to the hot water in the machine.

*Beef Steak Machine.*—The design of this patent, is a machine to be used as a substitute for the old method of pounding beef steaks to make them tender. It consists of a pair of rollers armed on their surfaces with cutting teeth, so as to sever the tough fibres of the beef, and render it more easy to masticate. When the steaks are ready to be cooked, they are run through these rollers one or more times, and transferred directly to the broiling apparatus.

*A machine to cut and assort broom corn,* has been patented, which it would be difficult to describe, without the aid of a drawing. The design of the machine, is to cut the broom corn into lengths according to the size of the stalk, and to assort them into parcels, according to their lengths, by the machine, so that they may be properly distributed for making different sized brooms. The machine consists of a long table with an endless apron running lengthwise, and beside it, and on the same level and a little obliquely to its direction, is arranged a pair of rollers running the whole length of the long



table. These rollers lie one upon the other, and are farthest from the endless apron at the entering end. This endless apron is a belt of slat work, put in motion by machinery, and gradually moving forward from the entering or feeding end of the table, where the broom corn is fed to it by hand, and laid directly across the apron with the butts all in one direction. When the broom corn has traversed about one-third the length of the table, it is brought under compressing rollers, while at the same time that the body of the stalk is held firm in its place, the butt is brought between two rotary disks with cutting edges arranged like two rotary or circular saws, having their cutting faces edge to edge, yet slightly lapping each other. The edges of these cutting disks are very thin, and the under one serrated. As the endless apron travels from the feeding to the discharging end, it brings successively the butts of all the corn stalks between the cutters by which they are severed, and as they still move forward, those stalks which are the longest, and consequently project farthest, are caught first between the rollers, and by this means carried from the endless table, while those which are shorter, are taken by that part of the rollers that is farther along. To avoid distributing the broom corn throughout the whole length of the assorting rollers, portions of the lower roller are turned out, leaving only enough to constitute the axle, and thus preventing any of the material from being drawn through in these sections, which divides the assorted material into several series or parcels, in number equal to that of the sections cut in the lower roller.

#### CLASS 21.—WEARING APPAREL.

Eleven patents have been granted under this class, as follows:

Instruments for drafting garments, . . . . .	3
Mode of varnishing buttons, . . . . .	1
Machine for cutting cap fronts, . . . . .	1
Mode of fastening hooks and eyes upon paper cards, . . . . .	2
Construction of shoulder stay and brace for ladies, . . . . .	1
For improved suspender buckles, . . . . .	2
For an improved stud and button for shirt bosoms, . . . . .	1

None of these patents presents any novelty of general interest, and the class will be passed over without further remark.

#### CLASS 16.—LEATHER.

Fourteen patents have been examined at my desk and issued. This class having been transferred from my desk in the early part of the year, to equalize the work at the several examiners' rooms, with a single exception, I have only to report on the cases examined by me previous to the transference.

Improved fastening of terrets to saddle trees, . . . . .	1
An improved breast plate for a carriage harness, . . . . .	1
A mode of simultaneously locking a trunk and fastening it to the floor, . . . . .	1
Improved harness buckle, . . . . .	2
Machine for manufacture of leather into hollow ware, &c., . . . . .	1
Machines for breaking hides, . . . . .	2
Harness hames, . . . . .	2
Machines for splitting and stretching leather, . . . . .	2
Spring wings to a harness saddle, . . . . .	1
Improved process of tanning leather, . . . . .	1



This last patent being the *re-issue* of a patent granted in 1849, and noticed in the report of that year as a new tanning process, demands further notice from your examiner as the experience of tanners brings it into use.

It appears from accounts, direct and indirect, that have reached this office, that the inventor so far as can be learned from statements that have been presented by the tanners from different sections of the country, who have made trial of the process, that the inventor has been enabled to penetrate the philosophy of tanning, and has developed the principle, or an important application of chemistry to this art, in the use of a *free acid* in combination with the *tannic acid*; the former to open the pores in what is called *plumping*, and the latter to enter through the openings when thus made and convert the gelatinous matter of the animal covering into leather. Quick tanning has been performed before. Such process, therefore, in itself, is not new, and has no claims to consideration. But the novelty consists in the combined use of the two acids named. This constitutes, what is denominated in the technical language of the office, a "*patentable combination*," in which neither of the elements by itself, is capable of performing that which is done by the combination.

Respectfully submitted.

L. D. GALE, *Examiner of Patents*.

HON. THOMAS EWBANK, *Commissioner of Patents*.

JANUARY 1st, 1851.

HON. THOMAS EWBANK,  
*Commissioner of Patents*.

SIR:—In conformity with your requisition, I have the honor to submit to you the following report in relation to the condition of the model department, which you were pleased to place under my charge in November last, and also the number of models received each year, for the past fourteen years; the space occupied by them, and the room necessary for their proper exhibition.

It would be very inconvenient, if not impossible, to allow a free access to visitors, to see the drawings and records in the Patent Office, but not so with the "models;" they should be accessible to all, and particularly to inventors, who should be at liberty to see them without the aid of the machinist, or his assistant.

To carry out the requirements of the office, every model of rejected applications, as well as patented inventions, should be placed under glass, distinctly labelled, and classed according to the arrangement adopted in the published reports, and according to their dates. This was contemplated, and provided for in the 20th section of the act of July 4th, 1836—[Sec. 20. "And be it further enacted, that it shall be the duty of the Commissioner to cause to be classified and arranged, in such rooms or galleries as may be provided for that purpose, in suitable cases, when necessary for their preservation, and in such manner as shall be conducive to a beneficial and favorable display thereof, the models and specimens of compositions and of fabrics, and other manufactures and works of art, patented or unpatented, which have been, or shall hereafter be, deposited in said office. And said rooms or galleries shall be kept open during suitable hours, for public inspection"] but has never been fully carried



out, in consequence of the insufficiency of room. A printed catalogue, or index, should then be prepared, the cost of which would be trifling compared with its advantage to the office, as well as to inventors.

The average space required for the exhibition of the models, may be set down as about one square foot for each. The number now in the office is as follows:

Of patents granted,	8524
“ applications rejected,	7890
“ “ pending,	170
“ “ suspended,	673
Total	17257

The models of patented inventions are now crowded into 22 cases, capable of holding for exhibition but 2720, (one model should never be placed before, or on top of another,) consequently they occupy less than one-third of the space required for their proper exhibition.

The models of rejected applications are now stored in the west basement of the building; and not being arranged in cases, they cannot be opened to the inspection of the public; this is contrary to the spirit of the law, which requires that they shall be open for public inspection.

As shown above, the cases now in use for the exhibition of models, measure but 2720 feet of available surface, while 16414 feet are required, not including room for models of pending and suspended applications.

The great hall on the upper floor, containing the collections of the late exploring expedition, also the collection of the National Institute, etc., in 62 cases constructed for the Patent Office, has not been used for the reception of models. These 62 cases are capable of holding 128 models each, or 7936 in all; which, added to those in the model room now in use, would give room for 12352 models; leaving 4062 without a place, unless they should be improperly crowded, as they are at present.

The number of models received during the past year was 2140, consequently, without calculating for any increase in the present year, over the last, we will have, in December, 1851, 6372 models unprovided for; they would nearly fill the hall of the east wing, which will be capable of accommodating about the same number estimated for the main hall, viz: 7936. The increase over former years, will certainly be sufficient to fill it, as soon as it is finished to receive them.

The following list of models received since the burning of the Patent Office in 1836, exhibits an increase annually, of about 225 in the last few years: the three first years being swelled by the models of restored patents, which had been destroyed by fire.

Year 1837, models received	1069
“ 1838 “ “	1263
“ 1839 “ “	1189
“ 1840 “ “	740
“ 1841 “ “	773
“ 1842 “ “	808
“ 1843 “ “	869
“ 1844 “ “	963
“ 1845 “ “	1149
“ 1846 “ “	1215



Year 1847	models received	1472
" 1848	" "	1698
" 1849	" "	1909
" 1850	" "	2140

Total now in the office, 17257

If this rate of increase should continue ten years, we may calculate on the reception of 33775 models; and by adding this to those already deposited, it will be seen that in the year 1860, inclusive, we shall have 51032; a number quite sufficient to fill, under proper classification, all the halls on the upper floor, including the north front and west wing of the building, supposing it to be finished for their reception, as originally designed; besides the hall designed for the same purpose, on the second floor of the west wing.

A room is indispensable for the models of pending applications, which require to be guarded from public view; it should be at least 20 × 40 feet square. These models are now kept in the machinist's room, where boxes are unpacked, and where applicants daily present their models in person. It is difficult, if not impossible, to prevent such applicants from seeing the models of other applicants, which have to remain sometimes thus exposed for months before the completion of their papers. A private room, of at least 20 feet square, with proper shelving, should also be provided for "caveated models," which have not, as yet, had a special place provided for them; a somewhat remarkable fact, as they are considered as belonging to the "secret archives" of the office.

A workshop is much wanted, where damaged models may be repaired: many of them being of delicate structure, are liable to injury in transporting them to the office, and afterwards subject to various accidents during their examination. A model maker should be employed, under the direction of the machinist, to perform this work, as well as to supply duplicates when required.

Here it may be well to remark, that models must be regarded as a part of the original records of a patent, and on no occasion should they be allowed to be removed from the office. Cases have occurred, when it was suggested that they were altered after they had been taken out of the office to be used in court as evidence, in cases of appeal; certified copies, in such cases, would answer the purpose better.

Workmen not belonging to the office, are engaged when duplicate models are wanted, who, from necessity, are admitted to the machinist's room, to take dimensions, while models of new applications are constantly being exposed to their view. This would be entirely prevented by having a suitable workshop, and a model maker under the control of the office, and in the same building. Two rooms of 20 feet square each, (one for working metals, and the other for woodwork,) now occupied by clerks in the basement, should be restored for this purpose. They could be better accommodated on the second floor of the east wing.

Other matter might be offered for your consideration, but for the present, the more important, above stated, it is believed, will be sufficient.

Respectfully submitted by

Your ob't servant,

SAM'L P. BELL,

Machinist.



## IV.

## HISTORICAL NOTICES

## INVENTORS AND PATENTEES.

## JAMES RUMSEY.

THE preface to Mr. Fitch's "*Original Steamboat*," (see last year's Report,) is dated in May, 1788. The pamphlet purports to be a reply to one by James Rumsey, of which a second edition had just appeared, entitled, "A short Treatise on the application of Steam; whereby, is clearly shown from actual experiments, that steam may be applied to propel boats or vessels of any burthen against rapid currents with great velocity. The same principles are also introduced with effect, by a machine of a simple and cheap construction, for the purpose of raising water sufficient for the working of grist mills, saw mills, &c., and for watering meadows; and other purposes of agriculture. By James Rumsey, of Berkely County, Virginia. Philadelphia: Printed by Joseph James, Chestnut-st., 1788." [From a copy in the library of Colonel Force.]

This treatise on steam, constitutes House Doc., No. 189, 27th Congress, 2nd Session, and therefore, need not be re-printed here. Soon after the second edition appeared in 1788, Mr. Rumsey sailed for Europe, and his friend Mr. Joseph Barnes, "a very ingenious mechanic, employed by James Rumsey, in constructing his several machines," undertook to defend him from the charges contained in Fitch's "*reply*." Mr. Barnes' pamphlet, now rare, is annexed.



## REMARKS

ON

MR. JOHN FITCH'S REPLY

TO

MR. JAMES RUMSEY'S PAMPHLET,

BY

JOSEPH BARNES:

FORMERLY ASSISTANT, AND NOW ATTORNEY IN FACT,

TO

JAMES RUMSEY.

PHILADELPHIA:

PRINTED BY JOSEPH JAMES,

Chesnut Street.

MDCCLXXXVIII.



## REMARKS, &amp;c.

MR. RUMSEY, before his late departure for England, by an advertisement, begged the candid public to suspend their opinion, respecting the controversy between him and Mr. Fitch, until time should be afforded to state his claim, and answer such objections as should occur, from a pamphlet which Mr. Fitch then had in the press, but had not appeared before he left this city.

Since that time Mr. Fitch has been busily employed in traducing Mr. Rumsey's character, and endeavoring to establish, in the public mind, an opinion, that Mr. Fitch was the first person who actually attempted to apply the force of steam to the purposes of navigation. If this assumption was admitted, which, however, will be fully disproved, nothing would thence follow prejudicial to Mr. Rumsey's claims; for it will appear from a cloud of testimony, that although both of them entertained the idea of applying the force of steam to the purposes of navigation, their modes of effecting it were as different from each other as possible. Mr. Fitch proposed to apply the action of steam by a number of cranks to oars or paddles; Mr. Rumsey thought of the force of reaction on the fore part of the boat, by a column of water forced through a trunk in the body of it. That Mr. Fitch originally entertained no other idea, than applying the force of steam to the working of paddles, will abundantly appear from his repeated models and experiments; from the plan published in the magazine, taken from a draught sent to the proprietors of that publication by Mr. Voight; and from his public declarations, that Mr. Rumsey's scheme could not be made effectual. That Mr. Rumsey had a different mode of applying the force of steam to navigation, is sufficiently apparent, not only from his publications on the subject, but from his apparatus now in this city, which was fitted between two and three years ago, and was last year actually applied to the purpose on the river Potowmac, and produced the desired effect, by propelling a boat, with a burthen of three tons on board, at the rate of four miles an hour, against the stream of that river.

In order to destroy Mr. Rumsey's character and views, which Mr. Fitch has thought dangerous to his interests, (although fortified by an extraordinary act of assembly,) he has published a pamphlet, containing a variety of depositions and certificates, tending to shew that Mr. Rumsey has anticipated a whole year, and by an attempt at witticism, has acknowledged his powers of condensation in this respect. That Mr. Rumsey's narration of facts is true, will be proved (if further proof was necessary,) by the several certificates and depositions hereto annexed, to which the reader is referred; but this is not the immediate object of the present publication. Mr. Rumsey had in the year 1785, prepared a steam engine upon the plan used and improved in Europe, to propel his boat, but was prevented by the frost from exhibiting it that fall; being thus prevented, he employed himself during the ensuing winter, in projecting more easy methods of producing the like effects; and by experiment, he discovered a mode of generating steam, so effectual, as to promise very great advantages to the inventor. To bring this invention to act on his former machinery, required some time, which was employed in perfecting it; several experiments were accordingly made, and in the end Mr. Rumsey's principles were proved to be good. During this time, Mr. Arthur Donaldson, a very ingenious mechanic, (whether from the strength of his own genius, or from hearing something of Mr. Rumsey's scheme, is not material in this dispute with Mr. Fitch, to ascertain) took up the idea, and made several experiments, which fully proved that the re-action of a column of water, forced with rapidity from the stern of a boat, would propel her forward so as to answer the end required for navigation. Mr. Donaldson communicated his ideas and experiments to many gentlemen in Philadelphia, who were satisfied of his principles, but they doubted whether the size of a boiler, and the quantity of fuel necessary to keep it heated, would not occupy so large a part of a boat, as to render her freight of no value; to reduce this to a certainty, gentlemen acquainted with steam engines in Europe, were consulted, and their opinions confirmed the doubts entertained, so that Mr. Donaldson gave up the idea of prosecuting his scheme.

While Mr. Donaldson was employed in experiments, Mr. Fitch had applied to the assembly of Pennsylvania, for the exclusive privilege of navigating by the force of steam, and was opposed before a committee of the house by Mr. Donaldson, when Mr. Fitch claimed all possible modes whether *invented or to be invented by himself, or others*, of using steam for that purpose; and as Mr. Donaldson, before a report was made by the committee to the house, was convinced by his friends that no boiler *then known* would generate steam in a sufficient quantity, and at a cheap rate, to answer the end, he declined his opposition, and a grant was made to Mr. Fitch, of the exclusive use of steam for navigation, in very large and comprehensive words. Since this grant, Mr. Fitch, and a large company, who associated with him, have made many experiments to reduce their boat to practice; all of which were to apply the force of steam (generated in a large boiler, agreeably to the old practice, long used in Europe,) to the working a number of paddles, on the sides of the boat, the abortive events of which have been too public to need repetition.



But about the month of January last, Mr. William Askew, of Berkeley county, who had been long acquainted with Mr. Rumsey, and had seen his apparatus, came to this city, and stimulated by curiosity, went to see Mr. Fitch's preparations, and there fell into conversation with Mr. Voight, Mr. Fitch's partner, and operator, and communicated to him such an idea of Mr. Rumsey's new invented boiler, as enabled him to form a plan of one upon the same principles. In the month of April last, Mr. Rumsey came to this city, and exhibited with little or no caution, a draft of his boiler, to a number of persons, and after some time laid it before the Philosophical Society, and was not a little surprised to find that Mr. Voight produced a draft of a boiler, upon the same principles, though a little differing in its form, before the society, the same evening. The several contrivances by which his contemporaneous production of Mr. Rumsey's original invention, and a surreptitious copy from it was effected, are well known, and will be proved upon a proper occasion; it is sufficient for the present, to inform the public, that Mr. Rumsey's original boiler is now in this city, and may hereafter be exhibited to them; *that* a new one with great improvements, is making, with all possible dispatch; *that* its efficacy in producing steam with vastly less expense, and yet in greater quantities than any mode yet practised in Europe, will be proved; *that* Mr. Rumsey is gone to England, to prevent a surreptitious copy of his first invention (which there is reason to believe was sent thither with great secrecy) from being *there* palmed on the public as an original, and to claim to himself the rights of an inventor.

About three weeks ago I came to this city, and brought with me most of the following depositions and certificates, the publication of which will, I have no doubt, establish all the facts asserted by Mr. Rumsey in his pamphlet. The circumstance of my superintending the different mechanics who worked for Mr. Rumsey, gave me the advantage of being competent to the explanation of the subject, and I can assure the public that Mr. Fitch has not got a single affidavit or certificate from Frederick Town or Baltimore, that has any relation thereto, except Mr. Christopher Raborg's, the copper-smith, No. 21, in his pamphlet.

The certificates and affidavits Mr. Fitch obtained in Frederick Town, Nos. 14, 15, 16, 17, 18, 19 and 20, allude to an eight foot tube, which Mr. Rumsey had made in the year 1786, for a second machine, an improvement on the one prepared in the fall, and do not at all relate to the first machine fitted on the boat in the fall; which was actually ready for experiment, and prevented by the ice in December, 1785. And from those certificates and affidavits, Mr. Fitch endeavors to prove, that as this work was done for Mr. Rumsey in the year 1786, therefore it follows, that no other work could have been done for *him*, by any mechanic whatever, before that period; according to this kind of logic, it could be proved, that Mr. Fitch never can possibly invent a steamboat to answer any useful purpose; for instance, because after sundry fruitless experiments with his *crank boat* machinery, he has not yet been able to accomplish this business; therefore it follows, from the nature of things, that he never can invent a steamboat, *probatum est*.

I have introduced in the following pages, certificates and depositions, which I trust will be satisfactory to the public. No. 1, 3, 5 and 7, prove the priority of Mr. Rumsey to the pipe boiler.

The silver-smith, or watch maker, mentioned in Mr. Askew's deposition, No. 3, is Mr. Henry Voight, a partner in Mr. Fitch's *intended* steamboat, whose name Mr. Askew (being a stranger) did not recollect at the time his deposition was taken, but whose residence and occupation are therein sufficiently described; from which it appears *what* were Mr. Voight's sentiments of Mr. Rumsey's boiler for generating steam, at *that time*; his doubts concerning its efficacy, might either arise from the novelty of the idea, a want of a thorough knowledge of its principles, or from a desire to draw from Mr. Askew a more full explanation thereof; otherwise he would not have waited from that time until several weeks after Mr. Rumsey came to this city, and had more fully explained the principles of his boiler to many characters here, previous to his sending a plan thereof to the Philosophical Society, and (as it is said) to Europe, and that nearly in the same form, and exactly on the principles of the boiler made by Mr. Rumsey some years ago, and this before he had himself made such a boiler, with the necessary apparatus, or tried any experiment of its efficacy.

Certificate No. 2, and the depositions 4 and 6, are pointed to the proof of the time when the cocks were actually made. No. 8, is an additional proof of the time, that the steamboat with her machinery, was brought down to the Shanandoah Falls, in the month of December, 1785. No. 9, 15 and 16, prove that Mr. Rumsey's ideas and experiments of a steamboat, were prior to any theretofore, suggested by Mr. Fitch. No. 10, is Mrs. Zimmer's deposition, upon whose certificate of the particular workman, who turned some of the works, Mr. Fitch lays so much stress, which is explicit as to the time when the first machinery was made, agreeably to Mr. Rumsey's assertions.

No. 11 is Mr. Raborg's deposition, who has been more clear and explicit on this subject, than even Mr. Fitch would have wished; as in Mr. Fitch's pamphlet, No. 21, Mr. Raborg has given his belief of the time, which in this deposition is fully confirmed by circumstances since discovered by him.

No. 12 and 17, are also important, the first being Mr. Weir's deposition, proves that he was mistaken in the time he mentions (as to the making of the four brass cocks) in the certificate given to Mr. Fitch, and published in his pamphlet No. 22.

I consider myself happy, that Mr. Fitch, by a serious acknowledgment, has acceded to the merit of Mr. Weir, whose character as a man of honor and integrity, I am fully convinced of, and beg leave to mention, that the certificate he gave Mr. Fitch, No. 22, introduced in page 28, of Mr. Fitch's pamphlet, was from the best recollection he then had on the subject, and that this was from memory only; but upon his discovering a receipt, he candidly and ingeniously first informed Mr. Fitch of the mistake, and afterwards, gave an explicit deposition, which we pre-



sume will satisfy the public. The certificate No. 17, will explain how unhappy Mr. Fitch has been, in his mode of attempting to invalidate Mr. Rumsey's statement of facts, as it retorts the charge of encouraging perjury, upon Mr. Fitch with the additional turpitude of soliciting the commission of so heinous a crime by the offer of a bribe. How far this conduct will comport with the introductory declaration of Mr. Fitch, in his pamphlet, where he says: "*It is the duty of every man, not only to avoid the commission of a crime; but so to conduct himself through life, as to bear the strictest scrutiny,*" I shall not at present comment on.

Certificates No. 18 and 19 corroborate the above fact, and introduce a further proof of Mr. Fitch's conduct in procuring certificates, by an actual commission of bribery being proved against him.

No. 13 proves the fact, which Mr. Weir's deposition No. 12, is adduced to authenticate, which is likewise stronger than from memory, from which alone, he gave Mr. Fitch the certificate No. 23, in his pamphlet.

Having now made a short reference to the depositions and certificates annexed, it may be proper to reply to Mr. Fitch's remarks on Governor Johnson's friendship towards him, when he disingenuously calls in question the Governor's *memory of candor*, though he seems modestly to acquit the latter. Whether Mr. Fitch's *gratitude* appears to advantage in this illiberal attack on so respectable a character, after such an instance of patronage and friendship, is easily decided. I shall take the liberty of stating, that, although previous to Mr. Fitch's application to Governor Johnson, Mr. Rumsey had in confidence, mentioned to him his idea of applying steam to the purposes of navigation, and bespoke some of the boat machinery at his iron works; yet Governor Johnson, not expecting, that either Mr. Rumsey or Mr. Fitch, had an exclusive right in the power of steam, as applied to navigation, or any other purpose; and taking it for granted, that their modes of application might be different, held himself at liberty to patronize both Mr. Rumsey and Mr. Fitch, not knowing which might produce the most approved plan, and succeed in so desirable an object. This line of conduct is consistent with the practice of the most enlightened characters in the philosophical world.

In pages 14 and 15 of Mr. Fitch's pamphlet, he says, "I have been greatly indebted to the assistance of my ingenious friend, Mr. Henry Voight, of this city; who has uniformly from my first undertaking to build a boat, afforded me valuable hints; and has united with me in perfecting my plans; to his inventive genius alone, I am indebted for the improvement in our mode of creating steam, a thought which struck him above two years ago; the drawing having been shewn to several persons, for we *never made a secret* of any part of our works; but a fear of departing from old established plans, made me fearful of adopting it, until I had found by his invention of *creating steam*, that a *condenser* might be constructed on the same principles, (viz: a spiral pipe or worm,) only by reversing the agent, for the best way of applying fire to evaporate *water into steam*, must also be the best way of applying *cold water* to condense steam, that is the bringing the greatest quantity of fire into action upon the greatest surface of water, or the contrary. And we had an additional inducement to study this subject, because the common way of fixing boilers, required so great a load of brick work, that it overloaded our boat; therefore, the first thought that must occur to every man attempting to raise steam on board a boat, must be to acquire that method which would require the least weight." A few remarks on this extraordinary paragraph are subjoined; first, as it appears from his own words, "*we never made a secret of any part of our works.*" If such a boiler had actually been invented, the public would have heard of it long before Mr. Rumsey's arrival in Philadelphia, last April; and a *fear of departing from old established plans*, it is presumed would not have prevented his making use of it in some of his experiments, had he understood the principles, *because the common way of fixing boilers required so great a load of brick work, that it overloaded our boat*, more especially, *as the first thought which must occur to every man attempting to raise steam on board a boat, must be to acquire that method which would require the least weight*. How unhappy is it for Mr. Fitch, not to have attended to the first thought, which must have occurred to every man on the subject, until he actually was acquainted with the experiments made by Mr. Rumsey; however, we confess this is not much to be wondered at, when he says, he found that from what he calls Mr. Voight's invention of creating steam, a condenser might be constructed on the same principles, viz: *a spiral pipe or worm*, only by reversing the agent, which is a true definition of every worm of a common still, and which Mr. Fitch claims as an original invention, though we presume his claim of this invention, will scarcely be acceded to, by those who have even seen a distillery, and only shews how far he can carry his bold attempts to deprive others of their rights. This same wonderful *spiral pipe or worm*, Mr. Fitch has made use of to prove, that the thought of creating steam by reversing the agent, must be known to every man who did but consider the subject, and had seen a pipe used in condensation; if so, the common worm of a still must have suggested the idea to every man, who considered the subject from the earliest period. That this is not a truth, facts unquestionably declare.

It may not be improper to remark here, that when Mr. Rumsey applied to the different legislatures, it was in order to obtain an exclusive right to his boat exhibited at Bath, in 1784, although previous to that time, he had actually conceived the idea of applying steam to the purposes of navigation, but not having fully perfected the most advantageous mode of application, he did not think himself authorized to introduce to the committees of the assemblies an *immatured* subject, which it appears Mr. Fitch's *modesty* permitted him to do, for from his own pamphlet, it is evident he has not yet brought his plans to any maturity. This will reconcile what was said in General Washington's letter to Governor Johnson, of Mr. Rumsey's idea of steam, being in his opinion at that time an *immatured idea*. As to Mr. Rumsey's assertion in his letter to the General, 10th March, 1785, as mentioned in Mr. Fitch's pamphlet, page 13, "*that he was not less sanguine*



in his boat projects, than when the General saw him at Richmond, and that he had made such further discoveries as would render them more extensively useful than was at first expected ;" this can only apply to the machinery of the steamboat, as the use of the pole boat could not be extended so far as Mr. Rumsey in that letter has suggested his improvements would reach. See No. 19, in Mr. Rumsey's pamphlet in which are these words :

After mentioning that kind of machine for propelling boats which the General had seen a model of, I proceed to say—"I have taken the greatest pains to perfect another kind of boat, upon the principles I mentioned to you at Richmond, in November last, and have the pleasure to inform you that I have brought it to great perfection ; it is true, it will cost something more than the other way, but, when in use, will be more manageable, and can be worked with as few hands ; the power is immense—and I have quite convinced myself that boats of passage may be made to go against the current of the *Mississippi* or *Ohio* rivers, or in the *Gulf Stream* (from the *Leeward* to the *Windward Islands*) from sixty to one hundred miles per day. I know this will appear strange and improbable to many persons, yet I am very certain it may be performed, besides, it is simple (when understood) and is also strictly philosophical."

What can we think of Mr. Fitch's candor after this ungenerous violation of it, by alleging that these further discoveries could only allude to the pole boat, notwithstanding this letter is published unmutated in Mr. Fitch's pamphlet, and Mr. Fitch must be sensible that Mr. Rumsey therein mentions another kind of boat ; and that poles could not be used in the *Gulf Stream*, and from the *Leeward* to the *Windward Islands*.

Mr. Fitch goes on to say, that the further discoveries mentioned in General Washington's letter to Mr. Rumsey, will not apply to steam, because steam could be no new discovery ; from this mode of reasoning, it will appear, that not only Mr. Fitch himself has made no new discoveries, nor even had a new idea on the subject of steam, (which will be readily granted by any candid man who is acquainted with him) but that no such new idea or discovery has ever been suggested to him by his friends, because as they related to steam, and that being no new idea or discovery, from Mr. Fitch's own relation of the subject, therefore as he has applied the conclusion to Mr. Rumsey, it is fair to hand it over to himself. Mr. Fitch, it seems, could not comprehend that the discoveries mentioned in the General's letter, could allude to the mode of applying steam to the purposes of navigation. This however is of a piece with the rest of the false reasoning which spreads very generally through Mr. Fitch's pamphlet, in order if possible, to evade the stubborn facts Mr. Rumsey has adduced. Mr. Fitch, when he finds himself hard pressed in the right of priority, says such a claim is entirely useless, as others "projected it before him, and if bare projections were sufficient to build a claim on, I have no doubt but there are people now in their graves, whose heirs may set up more early claims than either of us." On the contrary, when it is proved that Mr. Rumsey has succeeded earliest in this business, he then says it is shifting the ground, which sentiment will not be strenuously opposed, as it appears clearly to be the true ground on which the dispute will in all probability, eventually be determined ; or lastly, he intrenches himself behind what he with great propriety calls "my laws," which were obtained, not because he was the first man who thought of steam in its application to nautical purposes, nor because he first accomplished so desirable an object, but as being the first person who applied to different legislatures, in order to obtain an exclusive right to his own *immatured* ideas, or an exclusive right to exercise the faculties of the human mind, as far as they relate to *steamboats*, inasmuch that Mr. Fitch has repeatedly in conversation alleged, that if any person in Pennsylvania should invent a steamboat, upon different principles, and far superior, either to his own or Mr. Rumsey's, the inventor dare not produce it to the public without being liable to the full penalties of his law ; and it is alleged that should even a vessel owned and navigated by the citizens of any of the United States, or by the citizens of any foreign state, arrive at Philadelphia, propelled by the force of steam, however applied, such vessel would be liable to the penalties of his law. If this be really the case, the candid public will determine how far the principles of this law can be reconciled to the liberties of a free people, or to that encouragement which all enlightened states afford to every useful discovery in the arts and sciences.

In page 23 of Mr. Fitch's pamphlet, after some remarks on the principles on which exclusive privileges are founded in justice and policy, he proceeds in an uncandid manner to state the modes established in England, by which an inventor may claim the full benefit of what he had already invented ; and endeavors to give so specious a turn to the period, as though a patent obtained in England, would give a person the exclusive privilege to things *invented*, or *to be invented*.

Should any one in England make application for an exclusive right in a steamboat, he must of necessity, first file or record a plan or model of the machinery by which she was to be propelled, in which alone he could have an exclusive right ; and should he afterwards make further improvements therein, it would be necessary for him to apply for a patent for those second improvements, as has been the case in other instances ; and should a person applying allege (agreeable to Mr. Fitch's ideas) that although he might not be the first person who thought of steamboats, neither had yet perfected any thing effectual, but that he was uncertain whether he should not try twenty different modes of obtaining some one useful model, and that he would therefore wish an exclusive right in any or all of them *when invented* ; and that as a reward for his being the first person who had applied thus to register his thoughts on the subject, he considered that he ought in justice to be legally invested with the right of invention, to the exclusion of all others ; the officer to whom such an application should be made (if persisted in) would require no other mark of the applicant's insanity. As a proof that Mr. Fitch's ideas on the subject were not so *matured* as to authorize him, in justice, to apply to the legislatures, it is sufficient only to add, that he repeatedly shifted the machinery of his steamboat, since he exhibited the model before the Phi-



Philosophical Society, in the year 1785, and that he at length made an experiment in the river Delaware, with a boat moved by paddles and cranks, which, notwithstanding his various accounts of her wonderful performance, he has since deserted, as totally incompetent to any useful purpose and it is said he is now about making an experiment with another boat, wherein it has been suggested that he designs using a boiler nearly in the form, and exactly on the principles of the one invented by Mr. Rumsey, but still paddles and cranks are introduced. Should this plan not succeed, Mr. Fitch says in his pamphlet, page 22, "I am now trying an experiment, and the machine is nearly finished, to propel a boat, not by expelling water, but air, and I hope Mr. Rumsey will allow that this is a mode peculiar to myself." From this, one would suppose, that Mr. Fitch is not content with the exclusive privilege already obtained by a law, constituting him prince of the power of water or steam, but is desirous of being also created prince of the power of the air; and when this title is extinct in the present possessor, Mr. Fitch may step forward, it is presumed, upon clear and indisputable grounds, and his right of succession will not be disputed by Mr. Rumsey; but in the meantime, should this air boat fail, he may at length resort to Mr. Rumsey's plan of a trunk, &c., (in which he will meet with more difficulties than he may expect, although well described by Mr. Rumsey in his pamphlet) for which he appears to be paving the way, by introducing Mr. Clymer's certificate, No. 13, which he will say was originally Dr. Franklin's plan. Mr. Rumsey, to whom Mr. Fitch had read the whole or part of his pamphlet previous to its publication, conceived that it implied an accusation that he had taken his ideas from the Dr.'s communication of such a plan to the Philosophical Society, to which it is supposed Mr. Fitch must allude in page 22 of his pamphlet, where he also says the thought came originally from France, but by whom brought, or how communicated, he does not tell us; Mr. Rumsey, therefore, before his departure for Europe, (as I am informed) waited on Dr. Franklin, and mentioned that his plan of a steamboat was, as to him, an original invention, and assured him that before he came to this city, he had neither seen nor heard of his communication to the Philosophical Society; when the Dr., with his usual candor and politeness, presented him with one of his pamphlets written on this subject.

Mr. Fitch's assertion relative to the mode of drawing water in at the bottom, and pushing it out at the stern, and his contending the right of using it with Arthur Donaldson, before the assembly of Pennsylvania, in the beginning of 1786, is altogether false, as Mr. Donaldson was desirous that Mr. Fitch should only have an exclusive right to his own particular inventions, and not avail himself of the privilege of using any discovery or improvement *invented, or to be invented* by others; Mr. Fitch contended for the exclusive right of applying the agency of steam to the purposes of navigation, in every possible mode, and alleged that he did not know but he might try twenty methods of effecting this object. This vague manner of application, if it means any thing, certainly amounts to a desire to engross, not only the right of inventing, to the exclusion of all others, but to a claim of property in their inventions. Notwithstanding, at the time Mr. Donaldson and Mr. Fitch were before the committee of assembly, the latter appeared acquainted with the principles of a steamboat, as laid down by Mr. Donaldson, as Mr. Clymer expresses himself in No. 13, page 22, of Mr. Fitch's pamphlet; this only proves what otherwise might have been doubted, that Mr. Fitch is capable of understanding the principles of a thing, when communicated to him, which communication can be proved to have been made to him previous to this period—though this was long after Mr. Rumsey had bespoke some of his works for his steamboat, as will appear from the various certificates on this subject.

It may be necessary now to add that the heavy charges of perjury, falsehood, want of memory or candor, which are so illiberally brought by Mr. Fitch, against the fairest characters, were made by a man, who not only attempted to bribe a gentleman of character to swear to a falsehood, but who *actually committed* this heinous offence, in order either to avail himself of Mr. Rumsey's invention, or to prevent him from deriving the emoluments due to his ingenuity. How Mr. Fitch can, after this instance of flagitious conduct, expect the patronage of any honest man, I am at a loss to determine.

The depositions and certificates which follow, will, it is hoped, be sufficient to establish the principal facts stated by and in behalf of Mr. Rumsey, until a competent jurisdiction shall require a more full and pointed state of the case. Whether Mr. Rumsey's or Mr. Fitch's patrons have committed themselves too unreservedly to strangers, time alone will determine; but as Mr. Rumsey has been happy enough to cultivate and possess the friendship and esteem of some of the most eminent characters in the United States, so he has expressed the highest sense of gratitude for the honorable patronage afforded him, though a stranger, by a number of respectable characters in Philadelphia; and I am well assured, he will so conduct himself in the new and untried scenes of life, into which he is now about to enter, as not to cause a blush in the countenance of one of his friends, either in Europe or America; and he will expect the patronage of those friends, no longer than he shall himself support the character, not only of an ingenious, but of an

HONEST MAN.  
JOSEPH BARNES.

July 7th, 1788.

### PROOFS, &c.

VIRGINIA, Berkeley County, ss.

[L. s.] I, Moses Hunter, Clerk of the said county, do certify, that the following certificates, to wit, No. 1, signed by John Ritchie, No. 2, signed by John Mark and Abraham Shepherd, and the following depositions, William Askew, No. 3, taken by John Kearsley,



Charles Morrow, No. 4, taken by Cato Moore; Michael Entler, No. 5, taken by John Kearsley; Conrad Byers, No. 6, taken by Cato Moore; Jonathan Osborn, No. 7, taken by John Kearsley; Francis Hamilton, No. 8, taken by John Kearsley. I do certify, that the above named John Kearsley and Cato Moore, gentlemen, were at that time, and still are justices of the peace for the said county, and that all due faith and credit is, and ought to be given to all probates by them signed, as well in justice courts, as thereout.

In testimony whereof, I have hereunto set my hand, and affixed the seal of the said county, this 19th day of May, 1788. MOSES HUNTER.

(No. 1.)

ANTEATUM IRON WORKS, Maryland, May 15th, 1787.

At the request of Capt. Charles Morrow, I have examined the books of Richard Henderson & Co., respecting the time when Capt. James Rumsey had some iron bars drawn here, in the shape, and about the size of gun-scalps. I find accordingly, that he had,

1786, January 26th,	2 scalps,	weigh	27½lb.
" February 1st,	do.	do.	84
" " 4th,	6 do.	do.	67

At the time Mr. Rumsey applied for the above, I understood he wanted it for some of the purposes of his machinery: Given under my hand, the date above.

JOHN RITCHIE.

BERKELEY COUNTY, May 17th, 1788.

We do certify that Mr. John Ritchie, manager of the Anteatum iron works, in a letter to us directed, set forth the very same facts, which are stated above on this paper, in his handwriting, and mentioned to us in his letter, that if necessity required, he would come into this county to acknowledge the same. Given under our hands, date above.

JOHN KEARSLEY.  
CATO MOORE.

(No. 2.)

We, the subscribers, were at Capt. Charles Morrow's house at the time he received a letter from Mr. James Rumsey, dated at Philadelphia, 8th day of May, 1788, wherein he informed the said Morrow, that Mr. Fitch had obtained an affidavit from the founder that cast some large cocks for said Rumsey, setting forth that they were cast in March, 1786; said Morrow then produced his books, and turning to Mr. Rumsey's account, in which said Rumsey was charged with nine pounds, sixteen shillings, paid Mr. Raborg for cocks, the 29th of October, 1785

JOHN MARK.

ABRAHAM SHEPHERD.

I certify that the above signers are men of good fame; that they are personally known to me, and acknowledged their signatures before me, this 17th day of May, 1788.

CATO MOORE.

(No. 3.)

Berkeley County, ss.

This day, William Askew, of the county aforesaid, came before me, John Kearsley, one of the justices of the peace for said county, and made oath on the Holy Evangelists of Almighty God, that he was in the city of Philadelphia, in the month of September, 1787, when he had an opportunity of seeing the steamboat, (said to be constructed by Mr. Fitch,) which boat was shewn to this deponent by a gentleman, a silver smith, a German; who said, he was in connection with Mr. Fitch, in the undertaking of the boat aforesaid, and was so obliging as to invite this deponent to see the performance of said boat; the external incumbrance of the boat, the weight of the boiler, and the necessary quantity of wood, this deponent conceived, would render Mr. Fitch's boat of little utility, as he has endeavored to set forth in his deposition, No. 6, in Mr. Rumsey's pamphlet. The gentleman alluded to as aforesaid, Mr. Fitch's partner, the silver smith or watch maker, in Second street, on the opposite side of the way from Messrs. Wager & Hawbather, wine merchants, whom this deponent had a considerable discourse with, on the subject of Mr. Rumsey's steamboat; the said silver smith or watch maker, seemed to be of opinion, that Mr. Rumsey had borrowed his knowledge of the steamboat from said Mr. Fitch: this deponent then informed said silver smith or watch maker, partner to Mr. Fitch, that he personally knew Mr. Rumsey, had been about three years before that time at work at said steamboat, and that he had been endeavoring to perfect said boat since that period, under a variety of difficulties, for the want of mechanics, resources, &c. This deponent further saith, that he was again in the city of Philadelphia, in January and February last past, and that he then told the said silver smith or watch maker, that the boiler in said Fitch's boat was of such weight, and would require so much wood to boil the same, that of course, it would be of little or no use. This deponent drew the model of Mr. Rumsey's pipe boiler, and explained the manner of its working, and advised them to adopt a similar mode of making steam, and lay aside the mode of making steam in their way, which form said silver smith or watch maker seemed to be an entire stranger to. After a day or two spent, and after talking on the subject of steam, the silver smith aforesaid, endeavored to convince this deponent, that a pipe boiler could never be of any use.



and argued the impossibility of its answering the least good purpose; this deponent as strictly urged the practicability of the advantages of the pipe boiler, and said their boat in his opinion, would be more perfect, if they would adopt Mr. Rumsey's new invented mode of making steam, which mode the said silver smith or watch maker reprobated, and said it would not answer the purpose, and shewed this deponent several modes of making steam, as practised in Europe, and said they were preferable to the pipe boiler. And further, this deponent saith not.

This 15th day of May, 1788, William Askew, the above deponent, came before me, and made oath according to law, that the above deposition, is just and true, according to the best of his knowledge and belief.

JOHN KEARSLEY.

(No. 4.)

*Berkeley County, ss.*

This day, came Charles Morrow, before me, Cato Moore, one of the justices of the peace, for said county, and made oath, that to the best of his memory, Mr. Joseph Barnes, returned from Baltimore, early in the month of October, 1785, where he had been sent by Mr. Rumsey, to get some parts of the machinery cast for his steamboat, that the said Barnes on his return, told this deponent, that he had got four large cocks cast, that he had been disappointed in procuring money that he expected to receive in Baltimore, had therefore, left the cocks with Mr. Raborg, (the gentleman who had got the founder to cast them,) that they should be sent for the first opportunity, that he imagined they would cost somewhere about ten pounds; and this deponent further saith, that shortly after Mr. John Thornbury was going to Baltimore with his wagon, that this deponent wrote to Mr. Raborg, (Mr. Barnes being absent) either in his own or in Mr. Barnes name (he is not certain which) for the cocks, and sent the money by said Thornbury; and this deponent further saith, that upon examining his books, he finds Mr. Rumsey charged the 29th October, 1785, with £9 16s. 0d. paid Mr. Raborg for cocks, which entry this deponent is persuaded, must have been after the said Thornbury returned with the cocks, as the sum they cost, could not have been ascertained until then; and further this deponent saith not.

Sworn to before me, this 16th of May, 1788.

CATO MOORE.

These are to certify, that the within named Capt. Charles Morrow, has lived in Shepherd's Town many years, great part of his time has been spent as a merchant, and has served in offices pertaining to the public. We believe, in every one of his employments, (and as a citizen,) he has distinguished himself as a gentleman of strict honor and veracity. Given under our hands, this 17th day of May, 1788.

THOMAS WHITE,  
JOHN KEARSLEY,  
DANIEL BEDINGER,  
ABRAHAM SHEPHERD,  
WILLIAM MORGAN,  
MOSES HUNTER.

JOHN MARK,  
SMITH SLAUGHTER,  
FRANCIS HAMILTON,  
WILLIAM SPALDING,  
ADAM STEPHEN,

CATO MOORE,  
HENRY BEDINGER,  
JOHN KEYES,  
CORNELIUS WYNKOOP,  
HORATIO GATES,

I certify, that the above signers are personally known to me, are men of good fame, and acknowledged their signatures before me, this 17th of May, 1788.

CATO MOORE.

(No. 5.)

*Berkeley County, ss.*

This day, came Michael Entler, before me, John Kearsley, one of the justices of the peace for said county, and made oath, that as well as he remembers, about the beginning of February, 1786, he and Jonathan Osborn, began to weld some pipes for Mr. James Rumsey; the pipes were about the size of gun barrels, and he well remembers, that at the time the last six scalps were brought to him from the forge, that he and said Osborn, were at work at the first brought scalps; that, after they were welded, he and said Osborn cut the male screw on one end, and a female screw on the oilier end of each barrel, in order that they might be all screwed together; that after they were so far finished, they lay in my shiop six months, or perhaps longer; after which, Mr. Joseph Barnes came to me, and told me he wanted them put together; said Barnes then prepared a block, and assisted me to screw them together and bend them, they were bended nearly in the shape of a worm of a still, with this difference, that the rounds were placed so close, as nearly to touch each other; and this deponent further saith, that he understood that the above pipes were for the use of the steamboat, and further this deponent saith not.

Sworn before me, May 16th, 1788.

JOHN KEARSLEY.

We, the subscribers, have been long acquainted with the above named Michael Entler, and have found him a worthy, honest, sober man, and a man of truth.

THOMAS WHITE,  
CORNELIUS WYNKOOP,  
ABRAHAM SHEPHERD,  
JOHN MORROW,

JOHN MARK,  
WILLIAM SPALDING,  
THOMAS SHEPHERD,  
CATO MOORE.

HENRY BEDINGER,  
WILLIAM MORGAN,  
JOHN KEYES,

I certify, that these signers acknowledged their signatures before me, this 17th of May, 1788.

CATO MOORE.

(No. 6.)

*Berkeley County, ss.*

This day came Conrad Byers, before me, Cato Moore, one of the justices of the peace for this county, and made oath, that about the latter end of October, or beginning of November, one



thousand seven hundred and eighty-five, Mr. James Rumsey or Joseph Barnes, brought to my shop two large brass or copper cocks, and requested that handles might be made for them, which the said Byers, being assisted by Philip Strider, did make; they also made two springs, which the deponent understood was for the opening and shutting the same; and this deponent farther saith, that toward the latter end of November aforesaid, he made (being assisted by said Philip Strider) two pistons of about thirteen inches diameter, to which he brazed flanches, about one and a half inch broad; and this deponent further saith, that he made sundry other things, which he understood were all of them parts of the machinery for Mr. Rumsey's steamboat.

Sworn before me this 16th of May, 1788.

CATO MOORE.

We, the subscribers, have been long acquainted with the above mentioned Conrad Byers, and certify that he has supported the character of a worthy, honest man, and a man of truth.

THOMAS WHITE,	JOHN MARK,	HENRY BEDINGER,
CORNELIUS WYNKOOP,	WILLIAM MORGAN,	ABRAHAM SHEPHERD,
THOMAS SHEPHERD,	JOHN KEYES,	JOHN MORROW,
JOHN KEARSLEY,	WILLIAM SPALDING.	

I certify that these signers are personally known to me; that they are men of good fame, and acknowledged their signatures before me, this 17th of May, 1788.

CATO MOORE.

(No. 7.)

*Berkeley County, ss.*

This day came Jonathan Osborn before me, John Kearsley, one of the justices of the peace for said county, and made oath, that as well as he remembers, about the first day of February, seventeen hundred and eighty-six, this deponent and Michael Entler, began to weld some pipes for Mr. James Rumsey, they were about the size of gun barrels, and this deponent well remembers that at the time the last six scalps were brought to them from Anteatum forge, they were at work at the scalps that were first brought to them; that after they were welded they cut a male screw on the one end, and a female screw on the other end of each pipe, as they were all to be screwed together; that after this was done, they were left in said Michael Entler's shop six months or upwards; that after this, Mr. Joseph Barnes and said Entler put them together and bended them round a block, in shape resembling the worm of a still; this deponent understood that these pipes were for some of the purposes of said Mr. Rumsey's boat machine, and further this deponent saith not. Sworn to before me, this 16th day of May, 1788.

JOHN KEARSLEY.

We, the subscribers, have been long acquainted with the above named Jonathan Osborn, and certify that he supports the character of an honest man.

JOHN MORROW,	THOMAS WHITE,	JOHN MARK,
HENRY BEDINGER,	CORNELIUS WYNKOOP,	WILLIAM SPALDING,
CATO MOORE,	WILLIAM MORGAN,	ABRAHAM SHEPHERD,
THOS. SHEPHERD,	JOHN KEYES.	

I certify that the above signing was acknowledged before me, this 17th day of May, 1788.

CATO MOORE.

(No. 8.)

*Berkeley County, ss.*

This day came Francis Hamilton before me, John Kearsley, one of the justices of the peace for said county, and made oath, that as by a review of his, the said Francis' day-book, it appears that in the month of December, in the year of our Lord one thousand seven hundred and eighty-five, Mr. Joseph Barnes and James McMechen brought down the river Potowmac, to the Shannandoah Falls, a boat of about six tons burthen, with a variety of machinery on board, amongst which were two cylinders of copper, about thirteen inches diameter, and near three feet long, a copper boiler, four large brass or copper cocks, pumps, &c., where the said Barnes and McMechen, under the direction of Mr. James Rumsey, continued adapting and suitably fixing said machine to said boat, until the seventh of January, 1786, when the ice driving in the river, obliged them to desist proceeding further for that season, and they accordingly, that same day, drew the boat in the mouth of the run, took off the machinery, and laid it in my cellar for and during the winter. Further, that on the fourteenth day of March, a trial was made of the same, with some alteration in the machinery; that she moved against the current some distance, though not to much satisfaction, owing to the imperfection of the machinery. Furthermore, that said Barnes and McMechen were on board, likewise Captain Charles Morrow, and I myself, steered—and further saith not. Sworn to before me, May seventeenth, 1788.

JOHN KEARSLEY.

We, the subscribers, have been long acquainted with the above named Francis Hamilton, and have ever found him a gentleman of strict honor and veracity.

THOMAS WHITE,	JOHN KEYES,	ABRAHAM SHEPHERD,
DANIEL BEDINGER,	HENRY BEDINGER,	CORNELIUS WYNKOOP,
CATO MOORE,	SMITH SLAUGHTER,	JOHN MARK,
JOHN MORROW,	WILLIAM MORGAN.	



May 19th, 1788.

I have been acquainted with Mr. Francis Hamilton twenty-six years, and found him a person of veracity and respectable character.

ADAM STEPHEN.

I believe Mr. Hamilton to be a gentleman of integrity and character.

HORATIO GATES.

I am of the same opinion.

MOSES HUNTER.

I certify that the above signers are personally known to me, that they are men of good fame, and acknowledged their signatures before me, this 17th day of May, 1788.

CATO MOORE.

(No. 9.)

I do hereby certify, that in November, 1784, being at Richmond, attending the assembly as a representative from the county of Berkeley, I was in company with Mr. James Rumsey, he being an acquaintance, and from the same county; and that he then informed me (as I understood, in confidence) that he intended to construct a boat which was to be wrought altogether by steam; that he had tried the principles, some of which he mentioned; but I cannot ascertain the particulars; upon the whole of our conversation, I understood from him at that time, that his principal dependance, in the operation of his boat, was upon steam. Given under my hand, in Berkeley county, this 19th day of May, 1788.

MOSES HUNTER.

Witnesses present at signing.

JOHN MORROW.

ABEL WESTFALL.

(No. 10.)

This day came before me, Jacob Young, justice of the peace in and for this county of Frederick, and State of Maryland, Elizabeth Zimmer, and being duly qualified on the holy Evangelists of Almighty God, declared and said, that one week before the twenty-third of November, in the year of our Lord one thousand seven hundred and eighty-five, Mr. James Rumsey engaged my husband to make a quantity of copper work, among which was two round copper things of about three feet long, and better, and one foot wide, and may be better, all which parcel of work was finished before Christmas of the same year, and taken away. This deponent also well remembers of a certain John Peter, an artificer in tin work, to have been engaged to do some tin work, relative to the same machine, at the same time, and which was likewise finished before Christmas of the same year. This deponent likewise remembers to have seen three or four large cocks of metal, the same as still cocks, fixed to the same machine before it was taken away, and further this deponent understood, that the machine was to drive a boat, and that the round things was to raise water; this deponent likewise remembers of a certain gentleman, of a certain spare, thin complexion, and black hair, some time in April last, of this year one thousand seven hundred and eighty-eight, asked her, relative to the above subject, to which I answered in manner as herein recited, and further saith not. Sworn before

May the 16th, 1788.

JACOB YOUNG.

I certify being present, when the above deposition was taken.

THOMAS PRICE.

MARYLAND, *Frederick County, to wit:*

I do hereby certify, that Jacob Young, gentleman, before whom the within deposition was made, and who hath thereunto subscribed his name, was at the time thereof, one of the justices of Frederick County Court, duly authorized and qualified, &c.

[L. s.] In testimony, whereof, I have hereunto subscribed my name, and affixed the public seal of Frederick County Court, the 16th day of May, 1788.

WILLIAM RITCHIE, *Clk.*

(No. 11.)

STATE OF MARYLAND, *Baltimore County, ss.*

On the 9th day of June, 1788, came Christopher Raborg, of Baltimore Town, coppersmith, before me the subscriber, one of the justices of the peace for the county aforesaid, and made oath on the Holy Evangelists of Almighty God, that when he gave his certificate to Mr. John Fitch, on the 26th of April last past, that he the said Christopher, had got four brass cocks made by Mr. Charles Weir & Co., in the Fall, 1785: but not having made any charge thereof, to ascertain the time exactly, could not be more particular, but that he, the said deponent, hath since been able to ascertain the time when the said four cocks were made, for Mr. James Rumsey, by order of Mr. Joseph Barnes, and doth swear and declare, that the said four brass cocks were made some time in the months of September or October, of the year of our Lord, one thousand seven hundred and eighty-five; and it hath since appeared to this deponent, that the said four brass cocks were for the use of Mr. Rumsey, to be employed in his steamboat, and further this deponent saith not.

Sworn to before me,

GEORGE GOULD'TH PRESBURY.

*Baltimore County, to wit:*

I do hereby certify to all whom it doth or may concern, that George Gould'th Presbury, gentleman, before whom the within deposition was taken, and who hath thereto subscribed his name was at the time of the taking and signing thereof, and still is one of the justices of the peace, in



and for the county aforesaid, and to all certificates by him given as such, due faith and credit is, and ought to be given, as well in courts of justice as thereout.

[L. s.] In testimony whereof, I have hereto set my hand, and affixed the seal of my office, this tenth day of June, in the year of our Lord seventeen hundred and eighty-eight.

WILLIAM GIBSON,  
Clerk, Baltimore County.

(No. 12.)

STATE OF MARYLAND, *Baltimore County, ss.*

On this 9th day of June, 1788, came Charles Weir, of Baltimore town, founder, before me, the subscriber, one of the justices of the peace for the county aforesaid, and made oath on the Holy Evangelists of Almighty God, that when he gave his certificate on the twenty-sixth day of April, last past, of having made four brass cocks to Mr. John Fitch, he could not then recollect the exact time when; but that he, this deponent, by means of a receipt for money paid by him, which he has since found, can declare the time with precision, and doth positively make oath as aforesaid, that he made the said four brass cocks by the direction of, and for Mr. Christopher Raborg, (for the use of Mr. Rumsey's steamboat, as he has since learnt,) and delivered the said four cocks to said Christopher Raborg, on or about the 15th day of October, in the year of our Lord, one thousand seven hundred and eighty-five, and this deponent further saith, the money mentioned to be received in the receipt above alluded to, and dated the seventeenth day of October, seventeen hundred and eighty-five, was money received by this deponent, of the said Christopher Raborg, for the said four brass cocks; and further this deponent saith not.

Sworn before me,

GEORGE GOULD'TH PRESBURY.

*Baltimore County, to wit:*

I hereby certify to all whom it doth or may concern, that George Gould'th Presbury, gentleman, before whom the within deposition was taken, and who hath thereto subscribed his name, was at the time of taking and signing thereof, and still is one of the justices of the peace, in and for the county aforesaid, and to all certificates by him given as such, due faith and credit is, and ought to be given, as well in courts of justice as thereout.

[L. s.] In testimony whereof, I have hereunto set my hand, and affixed the seal of my office, this tenth day of June, in the year of our Lord, seventeen hundred and eighty-eight.

WILLIAM GIBSON,  
Clerk, Baltimore County.

(No. 13.)

STATE OF MARYLAND, *Baltimore County, ss.*

On this 10th day of June, 1788, came Isaac Cursten, of Baltimore town, founder, before me, the subscriber, one of the justices of the peace, for the county aforesaid, and made oath on the Holy Evangelists of Almighty God, that the certificate this deponent gave Mr. John Fitch, respecting four brass cocks made 29th March, 1786, by the deponent and Co. for Christopher Raborg, could not be the cocks alluded to, for, on further examination of my books, I find the price charged does not agree with the amount ascertained of the cocks made for Christopher Raborg, at the time he was employed by Mr. Joseph Barnes, neither does the time; for I am now satisfied, and do positively declare, and make oath as above, that the cocks were made some time at or about the 14th of October, 1785, that was for the use of Mr. Joseph Barnes, as we then thought; but have since learned, it was for the use of Mr. James Rumsey's steamboat, and from every circumstance, I find they have never been charged or booked, as it appears the cash was received at the delivery of said cocks; and further this deponent saith not.

GEORGE GOULD. PRESBURY.

*Baltimore County, to wit:*

I hereby certify to all whom it doth or may concern, that George Gould'th Presbury, gentleman, before whom the within deposition was taken, and who hath thereto subscribed his name, was at the time of the taking and signing thereof, and still is, one of the justices of the peace, in and for the county aforesaid, and to all certificates by him given as such, due faith and credit is and ought to be given, as well in courts of justice, as thereout.

[L. s.] In testimony whereof I have hereto set my hand, and affixed the seal of my office, this tenth day of June in the year of our Lord one thousand seven hundred and eighty-eight.

WILLIAM GIBSON,  
Clerk, Baltimore County.

(No. 14.)

*Berkeley County, ss.*

I do hereby certify, that having an occasion of boarding with Mr. James Rumsey, in the month of January, in the year of our Lord one thousand seven hundred and eighty-five, where, amongst many of his curious experiments, one I remember very particularly, which was, he caused to be made a hollow square tube (made of pine boards) about eight feet long, and about one inch and a half diameter in the cavity of the tube, which he suspended upon fine cords, and having a common gimlet hole bored at the end of said tube, and on the one side of the same, and hanging some weights over a small pulley, by a thread tied to the end of said tube, whereupon



pouring water by hand into said tube, it drew up a certain weight ; which being repeatedly tried, I asked Mr. Rumsey what he meant or intended by this experiment, to which he made answer, that by that principle he would make the boat go, and after some small matter of conversation, he took his pen and ink, and retired to make his calculations, as was his custom after experiments made, many of which he made during the winter ; in testimony of which I have hereunto set my hand, this 19th day of May, 1788.

NICHOLAS ONICK.

We, the subscribers to these presents, do hereby certify, that we have been long acquainted with the within mentioned Nicholas Onick, and have every reason to believe him to be a gentleman of strict honor and integrity.

ADAM STEPHEN,

GEORGE ROOTS,

JOHN MARK,

CORNELIUS WYNKOOP.

HORATIO GATES,

PHILIP PENDLETON,

JOHN COOK,

MOSES HUNTER,

JOHN MORROW,

DAVID GRAY,

Berkeley County, ss.

We do certify, that we received a letter from Nicholas Onick, saying that he drew the within certificate himself, and that if called on he would make oath to the same. Given under our hands this 19th of May, 1788.

CATO MOORE.

JOHN KEARSLEY.

(No. 15.)

I do certify, that Mr. James Rumsey, of Berkeley County, Virginia, in a conversation I had with him at the Warm Springs, in the latter end of July, or beginning of August, 1783, told me that he intended to construct a boat to go by the power of steam, and pointed out the great expenses it would save in water carriage.

JOHN WILSON.

PHILADELPHIA, July 4th, 1788.

(No. 16.)

I do certify that John Wilson, of Philadelphia, on his return from the Warm Springs, in the summer 1783, told me that Mr. James Rumsey was about to construct a boat that would go by strength of fire and steam, which the said Rumsey intended to have completed soon.

JULIANA STEWART.

PHILADELPHIA, July 4th, 1788.

(No. 17.)

This is to certify, that at the time I gave my certificate to Mr. John Fitch, in April last past, respecting having made four brass cocks, as per my certificate in Mr. Fitch's pamphlet, No. 22, and page 28 ; that the said Fitch then urged me to prove what I had therein certified. I told said Fitch that I was not then positive of the time they were made, therefore could not prove it. Said Fitch persisted in soliciting of me, and said he would give me any thing I would ask, only to prove it, and I should be handsomely rewarded ; but I positively refused. And further, that at the time Mr. Fitch called on me on his way to Annapolis, in May or June last, that I then showed him a receipt I had found since he had my certificate, that enabled me to be positive as to the time said cocks were made, and he said he was very sorry for it, that they would make a handle of it, and asked if they had called on me respecting it. I told him not.

CHARLES WEIR.

This certificate was voluntarily subscribed, and acknowledged in our presence, this fourth day of July, 1788.

her  
ALICE X WEIR.

mark

JOHN LINOILD.

BALTIMORE, July 4, 1788.

(No. 18.)

I certify, that Mr. Fitch came to our shop to get John Frymiller, an apprentice of Mr. Rabor's, to swear about something concerning a steamboat that Mr. Rumsey erected, for which he gave him, to the best of my knowledge, half a dollar, and treated him well, as the said Frymiller said ; and after he had been gone the best part of the afternoon, he returned to the shop again, when he appeared to me to be somewhat in liquor, and said he would not care to swear in the same manner oftener, if he could be always so treated.

CHRISTOPHER BRUDENHART.

BALTIMORE, July 4, 1788.

(No. 19.)

I also recollect well of John Frymiller being groggy, when he returned from the magistrate in the evening, where he had been to swear for Mr. Fitch, as per his pamphlet, No. 19, page 26. Given under my hand, this fourth day of July, one thousand seven hundred and eighty-eight.

CHRISTOPHER RABORG.



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[Dr. THORNTON, the first Superintendent of the Patent Office, became associated with Mr. Fitch, and wrote a small pamphlet on the Origin of Steam-boats. As it contains curious information, it is worth preserving.]

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SHORT ACCOUNT

OF THE

ORIGIN OF STEAMBOATS,

WRITTEN IN 1810,

AND NOW COMMITTED TO THE PRESS,

BY

W. THORNTON,

OF THE CITY OF WASHINGTON.

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WASHINGTON CITY:

PRINTED BY RAPINE AND ELLIOT, CAPITOL HILL.

1814.

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## ORIGIN OF STEAMBOATS.

CITY OF WASHINGTON, Jan. 1, 1810.

Finding that Mr. Robert Fulton, whose genius and talents I highly respect, has been by some considered as the inventor of the steamboat, I think it a duty to the memory of the late John Fitch, to set forth, with as much brevity as possible, the fallacy of this opinion; and to show, moreover, that if Mr. Fulton has any claim whatever to originality in his steamboat, it must be exceedingly limited.

In the year 1788, the late John Fitch applied for and obtained, a patent for the application of steam to navigation, in the States of Pennsylvania, New York, New Jersey, Delaware, &c., and soon after, the late Mr. James Rumsey conceiving he had made some discoveries in perfecting the same, applied to the State of Pennsylvania for a patent; but a company formed by John Fitch, under his State patents, of which the author of this was one of the principal shareholders, conceiving that the patent of Fitch was not for any peculiar mode of applying the steam to navigation, but that it extended to all known modes of propelling boats or vessels, contested before the assembly of Pennsylvania, and also before the assembly of Delaware, the mode proposed by Mr. Rumsey, and contended that the mode he proposed, viz. by drawing up the water into a tube, and forcing the same water out at the stern of the vessel or boat, which was derived from Dr. Franklin's works, (the Doctor being one of his company) was a mode they (Fitch's company) had a right to, for the plan was originally published in latin, about fifty years before, in the works of Bernoulli the younger, and two of Fitch's company and I appeared without counsel and pleaded our own cause in the assembly of Pennsylvania, (the Hon. Messrs. Findley and Smiley, of Congress, were then sitting members of the assembly,) and after a week's patient hearing against the most learned counsel of Pennsylvania, we obtained a decision in our favor, and afterwards also in Delaware. We believed, and contended that our claim of propelling boats by steam, included all the modes of propelling vessels and boats then known, and that the patent was for the application of steam, as an agent to the propelling powers, and the decisions of the legislatures were in favor of this construction, as Mr. Rumsey's company (of which the late Messrs. Bingham, Myers, Fisher, and many other worthy gentlemen were members,) were excluded from the right of using steamboats on any principle. We worked incessantly at the boat, to bring it to perfection, and some account of our labors may be seen in the travels of Brissot de Warville in this country, and under the disadvantages of never having seen a steam engine, on the principles contemplated, of not having a single engineer in our company or pay, we made engineers of common blacksmiths, and after expending many thousand dollars, the boat did not exceed three miles an hour. Finding great unwillingness in many to proceed, I proposed to the company to give up to any one, the half of my shares, who would, at his own expense, make a boat go at the rate of eight miles an hour in dead water, in eighteen months, or forfeit all the expenditures on failing; or I would engage with any others, to accept these terms. Each relinquished one half his shares, by making the forty shares eighty, and holding only as many of the new shares as he held of the old ones, and then subscribed as far as he thought proper, to enter on the terms by which many relinquished one half. I was among the number who proceeded, and in less than twelve months we were ready for the experiment. The day was appointed, and the experiment made in the following manner. A mile was measured in Front street, (or Water street) Philadelphia, and the bounds projected at right angles, as exactly as could be, to the wharves, where a flag was placed at each end, and also a stop watch. The boat was ordered under way at dead water, or when the tide was found to be without movement; as the boat passed one flag, it was struck, and at the same instant the watches were set off; as the boat reached the other flag, it was also struck, and the watches instantly stopped. Every precaution was taken before witnesses, the time was shown to all, the experiment declared to be fairly made, and the boat was found to go at the rate of eight miles an hour, or one mile within the eighth of an hour; on which the shares were signed over with great satisfaction, by the rest of the company. It afterwards went eighty miles in a day!\* The governor and council of Pennsylvania were so highly gratified with our labors, that without their intentions being previously known to us, governor Mifflin, attended by the council in procession, presented to the company, and placed in the boat, a superb silk flag, prepared expressly, and containing the arms of Pennsylvania,† and this flag we possessed till Mr. Fitch was sent to France by the company, at the request of Aaron Vail, Esq., our consul at L'Orient, who being one of the company, was solicitous to have steamboats built in France. John Fitch took the flag, unknown to the company, and presented it to the na-

\* Yet Mr. Fulton asserts that no successful experiments were ever made with steamboats before his!

† Perhaps I here make a mistake; for in the patent taken out by Messrs. Fitch and Voight, for the company, I find the flag of the United States represented. The archives of the state will show it, if necessary.



tional convention. Mr. Vail finding the workmen all put into requisition, and that none could be obtained to build the boats, paid the expenses of Mr. Fitch, who returned to the United States; and Mr. Vail afterwards subjected to the examination of Mr. Fulton, when in France, the papers and designs of the steamboat appertaining to the company.

Finding that the works on board the first boat were not strong enough, we built another of twenty-five tons burthen, rigged schooner fashion, intended to go to New Orleans and mount the Mississippi. When the principal parts of the work were prepared, and ready to put on board, the author of this, thinking no mistakes could be made by the company, went to the West Indies, on the 16th of October, 1790, to visit his mother for the last time, and expected to find on his return, the boat ascending the Mississippi at the rate of at least four miles an hour; but a spirit of innovation having seized some of the company, and their attempts to simplify the machine having ruined it, their unsuccessful endeavors to make it work, subjected them to debts which obliged them to sacrifice both boats and all the machinery; and on my return, after a two years' absence, I found, to my inexpressible grief, the whole of this very valuable scheme ruined. I had only then to wait till the patent taken out from the United States during my absence, (see No. 1,) for the benefit of the company, by Messrs. Fitch and Voight, in the year 1791, expired, and to take out a patent for these peculiar improvements which I had invented or suggested. Finding Mr. Fulton about to take out a patent, after he had examined every thing in the Patent Office relative to steamboats and steam engines, and not knowing whether he might recollect, among so many, those I had shown him of my own invention, I thought it proper to take a patent for them previous to a sight of his papers, or of any hint of what they contained; and I believe he will do me the justice to say I never saw one of his, nor had a hint of what they were, before my patent from the United States was issued. I find Mr. Fulton's patent rests principally on proportions, though the second section of the law expressly excludes proportions.\* He uses Watts' and Boulton's steam engines, and wheels at the sides of the boat, but an engine on the principles of Watts' and Boulton's was used by us, the application of which was since patented; and the use of the wheels at the sides was known to us, and I often urged their use in our first boat, as can be testified by Mr. Oliver Evans; but the objection to them on so small a scale, was their waste of power by the fall of the buckets or paddles on the water, and their lift of water in rising, both of which objections would diminish as the wheel increased in size; but side wheels could not be claimed as a new invention, for their use in navigation had long been known and published to the world by Dr. John Harris, in his *Lexicon Technicum*, in 1710, just one hundred years ago. If Mr. Fulton should claim the actual application of steam to wheels at the sides of a boat, in opposition to the above declarations, I beg leave to offer, as a caveat against any such claim, the fire ship of Edward Thomason, in the tenth volume of the *Repertory of Arts*, which was laid before the Lords of the Admiralty in 1796. This contains wheels at the sides, operated on by a steam engine, and was intended to possess the power of moving given distances in all directions, according to the intention of the director, so that without any person being on board, it would conduct itself into an enemy's port, and by clockwork, at a given moment explode the combustibles; which plan, I also presume, might suggest to any person of even less original genius than Mr. Fulton, the mode of letting off torpedos, which were invented during the war for independence, by the late Major Bushnell, of Connecticut.

Mr. Fulton's have never exceeded five miles an hour in dead water, and he declared it impossible to make one exceed that velocity, and offered me \$150,000 if I would make one that would exceed it. I agreed to his proposal at once, but he declined to write the terms. Our boat went at the rate of eight miles an hour, in the presence of many witnesses still living, and to comply with terms as before stated, which were completely and satisfactorily fulfilled; and yet he has nominally an exclusive privilege for navigating the waters of the State of New York; but not satisfied with this apparent violation of the rights of his fellow-citizens, he took out a patent from the United States, on the 11th of February, 1809, which act the legislature of New York must surely admit, supersedes their own, if they even thought its validity was before indisputable; and if Messrs. Livingston and Fulton attempt to shelter themselves under the expression of the seventh section of the patent law of 1793, by asserting that the provision only includes the grants of exclusive rights, by States, prior to the adoption of the present form of government, others may surely, on reversing the case, assert that the silence of the law is a clear proof that such a case was not considered as worthy of attention, because it could not be supposed to exist, being repugnant to common sense.

This silence precludes any construction favorable to the parties, and by making provision for the constitutional and general act, they are by a liberal and plain conclusion, excluded ipso facto from the prior advantage of the state act, even if it were valid, and that validity founded on proofs that these gentlemen were the inventors of the application of steam to navigation, or had made any essential improvements therein; but in the present circumstances to attempt an exclusive monopoly of these waters, is not merely to attempt to deprive others of natural and inherent rights; but without a shadow of reason to attempt also to deprive them of acquired rights under the general government, and as if the power and influence of individuals, which seem to have hitherto prevented an interference in vast monopoly, had encouraged to further acquirements of the rights of their fellow-citizens; and being discontented with the wise and equitable provisions of the Congress in which all other citizens have rested satisfied, they have exhibited an avaricious

\* But if claimed, I find his boat is exactly in the proportion of the boat we used, and which was made known to him by Mr. Aaron Vail, viz: 8 feet wide, by 60 feet long; Mr. Fulton's 20 feet wide and 150 feet long; in both cases exactly  $7\frac{1}{2}$  times the length of the breadth. Other proportions may answer as well, but this is given to show whence he derived his original ideas.



desire of obtaining an universal monopoly of the waters of the union by addressing the different legislatures of the states; and were even in Virginia on the point of succeeding, and the final question about to be put, when my letter (No. 2,) was handed to the Speaker of the House of Representatives, and the bill was immediately negatived. So bold and unprecedented an attempt to infringe the privileges of the citizens at large, if successful, would probably have terminated in soliciting the Congress to grant to a combination of rich merchants, the monopoly of the seas by the promise of low freights.

The law already passed in the State of New York, in favor of those gentlemen, shews that in the most enlightened assemblies of men, there are cases which being brought forward by persons of high character, to whom no suspicion of incorrectness can possibly attach, are hurried through the house without doubting their legality, or seeing any injustice in their consequences, especially when the minds of the leading members are deeply abstracted or absorbed in the contemplation of important affairs. If those gentlemen had successfully pursued their monopolizing system, and had obtained exclusive rights to navigate all the valuable waters in the union, of what consequence would a patent obtained in a legal and regular way from the United States have been, and that for only 14 years, while excluded by those gentlemen for 30 years from every valuable water, and this too without any plea whatever? Such grants, it is true, would be deemed so illegal, so unjust, so unconstitutional and oppressive, that every person would be willing to contend for, rather than abandon his rights; but there are few men, especially those who live by their wits or invention, so powerfully supported as Mr. Fulton has been, or who would voluntarily enter into suits, that by protraction, would perhaps, only be their death or terminate in their ruin.

WILLIAM THORNTON.

[No. 1.]

To the Honorable, the Secretary of State, the Secretary of War, and the Attorney General.

The petition of *John Fitch*, of the city of Philadelphia, humbly sheweth,

That your petitioner in the spring of the year, one thousand seven hundred and eighty-five, conceived the idea of applying steam to the purposes of propelling vessels through the water; that fully satisfied in his own mind, of the practicability of such a scheme, of its great immediate utility, and the important advantages which would in future result therefrom, not only to America, but the world at large, if the scheme should be carried into effectual operation, he divested himself of every other occupation, and undertook the arduous task, not doubting that when perfected, he should be amply rewarded. In his first attempts to procure assistance from Congress, and the Legislatures of many of the States, from the peculiar situation of their finances and the seeming impossibility of the success of his scheme, he met with no relief. Not entirely discouraged by those disappointments, he continued his application to his project, and prayed several of the states for an exclusive right to the use of fire and steam to navigation: that New Jersey, New York, Pennsylvania, Delaware and Virginia, granted him an exclusive right, agreeably to the prayer of his petition for fourteen years.

That the impracticability of procuring experienced workmen in America, your petitioner's total ignorance of the construction of a steam engine, together with the necessary deviation from the form described in books in order to accommodate its weight and bulk, to the narrow limits of a vessel, have caused him not only to expend about eight thousand dollars in successive experiments, but nearly four years of some of his grants have expired before he has been able to bring his engine to such a degree of perfection as to be carried into use.

That having at length fully succeeded in his scheme, proofs of which he is prepared to offer, he trusts he now comes forward, not as an imaginary projector, but as a man, who, contrary to the popular expectation, has really accomplished a design which on examination, will clearly evince the many and important advantages which must result therefrom to the United States, some of which your petitioner begs leave to enumerate.

The western waters of the United States, which have hitherto been navigated with great difficulty and expense, may now be ascended with safety, conveniency and great velocity; consequently by these means, an immediate increased value will be given to the Western Territory; all the internal waters of the United States, will be rendered much more convenient and safe, and the carriage on them much more expeditious; that from these advantages will result a great saving in the labor of men and horses, as well as expense to the traveller.

Your petitioner also conceives that the introduction of a complete steam engine, formed upon the newest and best principles into such a country as America, where labor is high, would entitle him to public countenance and encouragement, independant of its use in navigation; he begs leave to say, that the great length of time, and vast sum of money expended in bringing the scheme to perfection, have been wholly occasioned by his total ignorance of the improved state of steam engines, a perfect knowledge of which has not been acquired without an infinite number of fruitless experiments; for not a person could be found who was acquainted with the minutiae of Bolton and Watt's new engine; and whether your petitioner's engine is similar or not to those in England, he is to this moment totally ignorant; but is happy to say, that he is now able to make a complete steam engine, which in its effects he believes, is equal to the best in Europe; the construction of which he has never kept a secret.

That on his first undertaking the scheme, he knew there were a great number of ways of applying the power of steam to the propelling of vessels through the water, perhaps all equally effective; but this formed no part of his consideration, knowing that if he could bring his steam engine to



work in a boat he would be under no difficulty in applying its force ; therefore, he trusts no interference with him in propelling boats by steam under any pretence of a different mode of application will be permitted ; for should that be the case, the employment of his time, and the amazing expense attending the perfecting of his scheme, would, whilst they gave the world a valuable discovery, and to America, peculiar and important advantages, eventuate in the total ruin of your petitioner ; for a thousand different modes may be applied by subsequent navigators, all of them benefitting by the expense and labor of your petitioner, and thus sharing with him those profits which they never earned ; such a consequence, he is confident will not be permitted by your honorable body.

Your petitioner, therefore, prays that your honors will take the subject of his petition into consideration, and by granting him an exclusive right to the use of the steam navigation for a limited time, do him that justice which he conceives he merits, and which he trusts will redound to the honor, and add to the true interest of America ; and your petitioner as in duty bound shall ever pray.

JOHN FITCH.

New York, 22d June, 1790.

[No. 2.]

DEPARTMENT OF STATE, {  
PATENT OFFICE, 1810. }

Sir :—I address you with extreme reluctance on the subject which affects very nearly the interests of many of my fellow-citizens ; but being called upon by them, I consider it as a duty to represent to you and through you, to the honorable body over which you preside, that they view with very great concern an attempt to obtain from the legislature of your state, an exclusive right to navigate with steamboats the waters therein for a very long period ; which, if granted, would effectually deprive many ingenious inventors and mechanics, of the benefits expected from their various inventions and improvements in steamboats, for which they have taken patents from the United States, under an impression, that the states had ceded by the constitution to the Congress, the right to grant patents or exclusive privileges for limited times to authors or inventors, thereby to promote the sciences and arts ; on the expiration of which limitations their several inventions become the property of every citizen of the United States, by which tacit contract the individual is for a time benefitted, and the public forever after. But if the honorable, the legislature of your state, grant the privileges now desired, the example may lead to dangerous and oppressive consequences.

This is submitted to your consideration, with the highest respect and deference.

WILLIAM THORNTON.

To the Honorable, the Speaker of the House of Representatives of Virginia.



## V.

## ABORIGINAL ARTS.

GOLDSMITHING AMONG THE AZTECS.

SPINNING AND WEAVING BY AZTECS.

SPINNING AND WEAVING BY MODERN INDIANS.

REMARKS ON SPINNING.

## ABORIGINAL ARTS.

THERE is a peculiar propriety, it is believed, in preserving in the reports of this bureau, remarkable relics of aboriginal inventions. Our government occasionally employs artists to paint the portraits of Indian Chiefs—works of transient interest and value. There can, therefore, be little ground on which to rear objections to the recording a few illustrations of the arts of the Aztecs, presenting as they do, vivid examples of ancient mechanical and industrial effort. In the present section will be found four uncouth figures—copies of old native drawings—sent to Spain by Antonio de Mendoza, the successor of Cortés, and first viceroy of New Spain, and copied into Lord Kingsborough's rare volumes on the Antiquities of Mexico. Than such pictures, few pages of history are more instructive, or impart a better insight into the character and condition of the half civilized races whom Cortés and Pizarro subdued.



Aztec Goldsmith at work—From Mendoza's collection.

In this figure the artist has represented a workman in the act of soldering or annealing a piece of plate. Except the rude style in which the native limners portrayed the human figure, the cut is a fac-simile of Pharaonic profiles of the same class of workmen, and of modern goldsmiths of Africa, Hindostan, Java, Sumatra, Ceylon, and Asia generally. The small portable furnace, blow-pipe, position of the artist, scantiness of apparel, and the ground his workbench, are common to all; the only observable difference is in the apron (suspended, too, by long shoulder straps) of the American, who, in this respect, seems to have advanced beyond his brethren of the other hemisphere.



Had the draughtsman possessed the skill of a modern artist, and painted the tools and processes used in fusing the metal, of spreading it out into plates, working it into shape, and chasing in the ornaments ; of drawing wire, and fabricating the famous old Panama chains, &c., &c., many other problems of Aztec economy and art would have been solved.

The smiths of Mexico, Central America, and Peru, were expert in the use of the blowpipe ; and this is not to be wondered at, if, as early Spanish writers report, the bellows was unknown among them. In specimens of their work extant, the soldering rivals any thing executed in modern workshops ; seams often challenge, and sometimes defy the keenest scrutiny to detect them. Native smiths still use the pipe.

Every enlightened workman in metals, must feel interested in thus beholding an ancient red brother in the actual use of the blowpipe, to say nothing of the illustration the figure affords of the state of the arts in anti-Columbian epochs, and of ancient life on this part of the planet.

The use of the blowpipe has been inferred from metalline remains discovered in sepulchral tumuli of the Mississippi valley. In Caleb Atwater's *Antiquities of the West*—Columbus 1833, p. 92-3,—mention is made of sixty copper beads, found in one of the mounds at Grave creek, near Wheeling. "They were made of a coarse wire, which appeared to have been hammered out, not drawn, and were cut off at unequal lengths. *They were soldered together in an awkward manner, the centre of some of them uniting with the edges of the others.* They were encrusted with verdigrise, but the inside of them was pure copper. This fact shows that the ancient inhabitants were not wholly unacquainted with the use of metals." As it is admitted that brass was not known to the mound builders, an analysis of the alloy that constituted the brazen solder alluded to above, would be a positive addition to the little knowledge we have gleaned of these remote native artisans and of their arts.

## SPINNING.

No matter how far man is separated from his fellows, either on the earth's surface, or by time, the general uniformity of his organization is stamped on all his normal devices. Primitive inventions are universally allied. Under similar circumstances and conditions, the same means are hit upon to reach the same ends. Kindred trains of thought, of resources and results, characterize the origin and early progress of the most essential arts everywhere : beginning in the same wants, they suggest the same ideas, which are carried out in substantially the same manner.

Still, when a primitive people is found shut out from communion with others ; isolated from the rest of the world, and deriving no thoughts from it—some shades of difference, more or less strongly defined, often mark devices discovered by them in common with others ; and this, whether occupiers of small islands or wide spread continents. But after all, this is nothing more than what may be named a variety of *expression* : the same general idea being differently brought out, just as in speech, utterance is given to the same thoughts after various idioms. All arts and all machines are but dialects of one language—reasonings and conclusions represented in tangible forms and figures—a universal speech, and understood by all men.

Of the diversity in the unfolding of a primitive and common suggestion, a more interesting example cannot well be adduced, than the phases in which the



fabrication of thread has been disclosed on this half of the globe. They appear so different from others, and so peculiar, if not unique, that it may safely be said, if the first spinsters were exotics, their mode of spinning was indigenous; however difficult, if not impossible it may be to reconcile the one with the other.

Spinning lies at the threshold of human culture. It was the first, or among the first born of the arts, and was doubtless the offspring of female cogitation. Throughout all ages of the past, it was under the peculiar province of the sex. In it, queens and even goddesses sought to excel: one of the earliest of useful efforts, it was one of the best. Till it was introduced man was a houseless wanderer, and where it is not, he is still a vagabond, roaming the forest. Home, and its softenings and soothing influences, were unknown, till women began to twirl the spindle; till then, the fair fount of the arts was unopened, unthought of, undreamt of: an universal acquirement, it is one in which little variations, in details, could be looked for among uncultivated tribes. It is, however, singular that the thread-making idea has been less skilfully developed by the red race, than perhaps any other of their mechanical conceptions; this is remarkable in people so far advanced as the Mexicans, Peruvians, and others were.

The distaff is identified with spinning in the old world, from the earliest times. It dates behind, far behind, historic, and was quite a common thing in heroic and mythic epochs. It pervades the most ancient of legends, and plays a part in the remotest of myths. No other instrument of domestic economy is clearer seen through the semi-historic mists that enshroud the infancy of human career; few others could be named as belonging to lower strata of time. Common in the other hemisphere through unknown periods, and yet utterly a stranger to this.

Of the province assigned to the fates, Clotho held the distaff, while Lachesis twirled the spindle, and Atropos determined the length of the thread. Then there was Hercules, who was playfully rapped over the head by Omphale, for his awkwardness in holding it. Sardanapalus, too, endeavored to rival the son of Jupiter, by spinning with it among his maids. Ancient Egyptian spindles and distaffs have been recovered from the tombs; and how common they both were among the Hebrews, appears in Solomon's portrait of a virtuous woman. "She seeketh wool and flax—she layeth her hands to the spindle, and her hands hold the distaff." Both spindle and distaff were frequently dedicated to Minerva, the patroness of spinning, and of the arts connected with it. The goddess was herself rudely sculptured with them in the Trojan Palladium.

A glance at these classic implements, before introducing the primitive American apparatus, will better enable one to perceive the difference existing between them, more correctly to appreciate both, and to judge how far one is allied to, or could have been derived from the other.





Distaff and Spindle—Ancient Greek and Roman.

This figure is from a series of bas-reliefs representing the arts of Minerva, upon a frieze of the Forum Palladium, at Rome. It shows the operation of spinning, at the moment when the spinner has drawn out a sufficient length of thread from the distaff, and just previous to the act of taking it out of the slit on the top of the spindle, to wind it on the latter. It is said by classic writers, that the spindle was always when in use, accompanied by the distaff, as “an indisputable part of the apparatus.” The following particulars are gathered from Homer, Herodotus, Ovid, Horace, Catullus, Pliny and others. The spindle was a stick, ten or twelve inches long, having at the top a slit or notch, by which to fix the thread at the commencement; the lower end was passed through, and attached to a small but heavy disc or whorl, made of wood, stone or metal. The weight of this, and of the spindle, kept the thread at a proper tension, and the momentum while turning round, kept twisting the yarn or thread in the interim of repeating the operation with the fingers. When from the length of the thread, the spindle approached the ground, or descended below the reach of the fingers, the thread was wound on the spindle, except a short piece left for insertion in the slit, preparatory to the formation of another length. The distaff was about three times the length of the spindle, and commonly made of a reed, with an expansion near the top, over which the prepared flax or wool was placed, and secured by a ribbon or tape; the fibres being left sufficiently loose to be easily drawn out by the fingers and thumb of the spinner. Distaffs, as well as spindles, of gold and of ivory, were ascribed to goddesses, and were really presented to distinguished females.

It was quite common for ancient females to keep their spindles whirling while on their way to the fountain for water, or making short visits, &c. Some striking examples have been recorded by historians, and among them, the following one by Herodotus:—As Darius, king of Persia, was sitting publicly in one of the streets of Sardis, he observed a young woman of great elegance and beauty, bearing a vessel on her head, leading a horse by a bridle fastened round her arm, and at the same time spinning some thread. Darius viewed her as she passed with attentive curiosity, observing that her employments were not those of a Persian, Lydian, nor indeed of any Asiatic female. Prompted by what he had seen, he sent some of his attendants to observe what she did with the horse; they accordingly followed her. When she came to the river, she gave the horse some water and then filled her pitcher; having done this, she returned by the way she came with the pitcher of water on her head, the horse fastened by a bridle to her arm, and as before, employed in spinning.



In the rural districts of old Rome, women were forbidden to spin while travelling on foot. The prohibition arose from superstitious motives; but the practice has come down to our times, being found more or less common in Spain, Portugal, Hungary, Italy, Greece, and other parts of Europe; as also over the greater part of Asia. The shank of the distaff on such occasions being secured by a sheath or strap to the person; or, as in the following figure of a modern spinner, grasped under the left arm.



Distaff and Spindle—Modern Asiatic and European.

How differently the idea has been worked out by the ancient dwellers on this hemisphere, will appear in the two next illustrations. Coarse and uncouth they are; yet of unusual interest and value in an historical view of a people who at the conquest stood at the head of the aborigines; but whose nationality and power have been broken, and whose arts have all but vanished before those introduced by the whites.



Aztec girl spinning—From Mendoza's collection.



The figure on the foot of the preceding page represents a girl six years old, learning to spin in the presence of her mother, the portrait of whom is omitted. She is in the act of winding on the spindle the length of thread just spun. The spindle differs but little from those of the eastern world, its lower end being furnished with a conical weight or fly to promote rotation, and as it would seem for its pointed extremity to rest like a pivot in some small cavity while revolving; for the spindle when in use, was not raised from the ground—the reverse of the eastern practice, in which the motion ceased the moment the pivot touched it.

The basket-like base on which the fly rests, is the Mexican symbol of the ground, though possibly it may here represent an implement or utensil also. The bunch of cotton to be spun, after being suitably prepared, was held in the left hand, and the length of thread formed at one operation determined by the distance the bunch could be drawn away from the spindle, this being also the converse of the Asiatic and European practice, in which the distaff and cotton on it are at rest—the length of the thread depending on the descent of the spindle from them. We know that domestic industry was strictly enforced by the Mexicans, particularly on girls; and of this, these cuts are remarkable illustrations.



Aztec woman spinning—From Mendoza's collection.

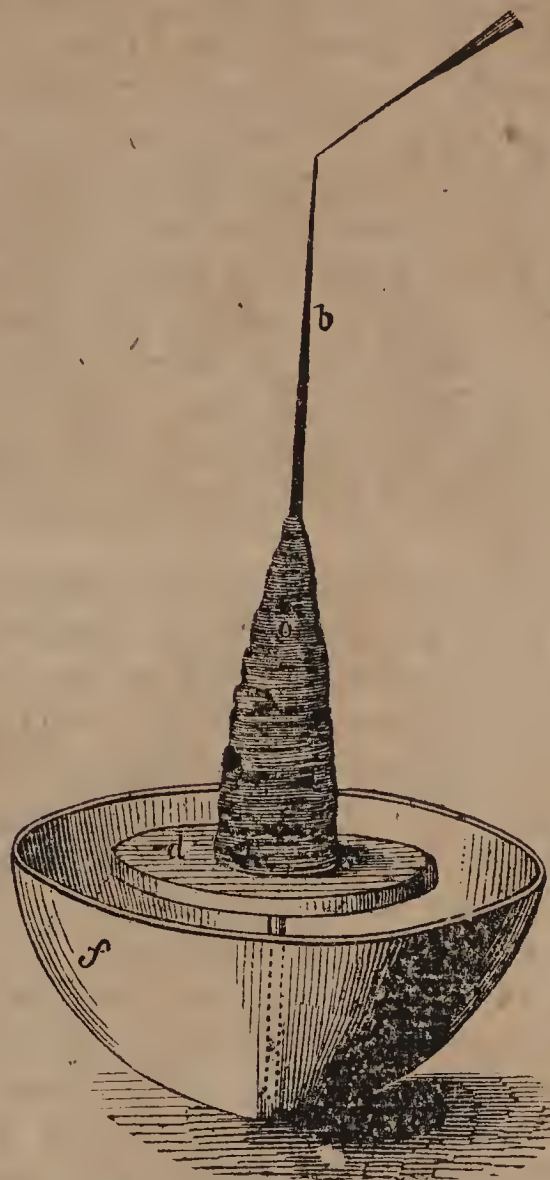
In this, a female adult (as the head dress symbolizes) is at work, and portrayed at the moment when a full length of thread has been twisted, or in the act of finishing it. To this spindle, *two* conical weights are attached, unless the under one was fixed and had a cavity on the top to admit the point of the upper one to play in it. The process differs but little from that of the present Pimos and Maricopas tribes, as mentioned on a succeeding page, except in the hollow in which the spindle turns. It is obvious this practice is incompatible with walking; locomotion can only be associated with a spindle suspended by the thread, and whirling free above the ground. In this absence of the distaff, and especially in twirling the spindle like a top *on the floor*, the process can never be viewed as one derived from abroad; but rather as the sole result of native thought and primitive resource. No people, civilized or savage, of the eastern hemisphere, are known to have thus used and embarrassed the movements of the spindle. The idea and the practice, appear to be purely American. No ancient American spinner is represented at work, either seated or standing—much less when walking.

For the following illustration and description, the office is indebted to Mr. Squier, late United States Chargé to Nicaragua. It is interesting as showing how little the old native process has been changed.

The common foot wheel is extensively used in spinning cotton in Nicaragua, but the primitive contrivance in use before the conquest, is not yet en-



tirely supplanted. It consists of a spindle of hard wood, sixteen or eighteen inches in length, which passes through and is fixed to a disc of heavy wood that serves as a fly, by adding momentum to the whirling spindle. The lower end of the spindle is rounded or rudely pointed, and when in use, the instrument is placed in a calabash or clean iron kettle.



Modern Spinning Apparatus of Central American Indians.

The *modus operandi* is as follows :—The spinster is seated in a stool with a bunch of loose cotton already prepared, in her lap. From this she twists a thread with her fingers, and attaches the end to the spindle at the top, giving it an energetic twirl that keeps it going for some time. Meanwhile she disengages and draws out the cotton from her lap with both hands. The length of thread spun (from two to three feet) is then wound around the spindle, which is again set in motion, and another length added in like manner.

In the accompanying sketch *a* is the cotton, *b* the spindle, *c* the thread already twisted, *d* the disc or fly, and *f* the calabash. When the spindle is not in motion the calabash prevents it from falling over, the fly resting against the sides.

In the regions of the Gila and Colorado the natives have been little disturbed by white people. The Spaniards never extended their iron sway over them, and like the Americans of Peru, they have been supposed to retain many of the customs and arts of their forefathers. This is to some extent true. The country soon after the conquest, was reported to be occupied by a civilized people, one who followed agriculture and dwelt in stone houses. Colonel Emory, in his Notes of a Military Reconnoissance from Fort Leavenworth in Missouri, to San Diego in California, including part of the Arkansas, Del Norte, and Gila Rivers, [Ex. Doc. No. 41. Washington, 1848,] met with remains of stone and adobe houses, scattered over extensive tracts of



ground—sometimes continued over ten, fifteen and even twenty miles. The Pecos tribe, he observes, have preserved alive till within a few years, the sacred fire that glowed on the ancient altars; nor is it certain that it is not yet preserved, for a few Indians took it with them to the Pueblos of Zuni. The name of Montezuma is said to be as familiar to those Indians, to the Apaches, Navajos, and others, as that of our Saviour or Washington is to us.

Turning from some old ruins towards the Pimos village—observes Colonel Emory—we urged our guide to go fast, as we wished to see as much of his people as the day would permit. We were at once impressed with the beauty, order and disposition of the arrangements for irrigating and draining the land. Corn, wheat and cotton are the crops of this peaceful and intelligent race of people. All the crops have been gathered in, and the stubbles show they have been luxuriant. The cotton has been picked and stacked for drying on the tops of sheds. The fields are sub-divided by ridges of earth into rectangles of about  $200 \times 100$  feet for the convenience of irrigating. The fences are stakes wattled with willow and mezquite, and in this particular set an example of economy in agriculture, worthy to be followed by Mexicans, who never use fences at all.

The thatched houses of the Pimos are dome shaped, and of wicker work, about 6 feet high, and from 20 to 50 feet in diameter. In front is usually a large arbor, on the top of which cotton in the pod is piled for drying.

A Pimos spinster was observed at work. "Her apparatus was more simple than the preceding figures, but closely allied to them; in fact the same, with the exception of the calabash or basket, for which a more ready substitute, one always ready, was adopted. A woman was seated on the ground under the shade of one of the cotton sheds. Her left leg was tucked under her seat, and her foot turned sole upwards. Between her big toe and the next, was a spindle, about 18 inches long, with a single fly of four or six inches. Ever and anon, she gave it a twist in a dexterous manner, and at its end was drawn a coarse cotton thread. This was their spinning jenny." The application of the foot-fingers is akin to that of the wives and daughters of Hindoo weavers. The axles of their light cane reels are thus held when winding off the thread. The foot is however in front of its owner, and in a natural position, nor does the stick grasped by the toes revolve.

The Pimos and Maricopas are in their habits, agriculture, religion and manufactures, the same.



Indians Spinning Coarse Thread.



A process of undoubted antiquity, and occasionally followed by modern Indians, is shown on page 380. The spinner holds in the left hand, and horizontally, a short piece of hollow reed or cane, and within it the spindle is twirled by the fingers and thumb of the right hand. Sometimes a cross stick or handle is attached, as represented in the figure. A second person performs the part of a distaff, which, as the thread lengthens, recedes from the spinner, or the spinner from it; a section of this primitive apparatus is separately portrayed.

Mr. Van,—a delegate now in Washington from the Cherokee nation, to obtain a settlement of claims on the United States, for their lands in Georgia, Alabama, &c.,—states that the large old spinning wheel has, to his knowledge, been in the possession of the Cherokees, nearly fifty years. His mother, a Creek, and over a hundred years of age, he believes, used to spin with it in her youth. Mr. Van has seen Indians twist coarse thread with apparatus same as the above; an apparatus which, in all probability, formed one of the early contrivances that slowly led to the whirling spindle in both hemispheres.

For the next two illustrations of spinning by the Navajoes, Camanches, and other tribes of New Mexico, the office is indebted to Judge Peters, of Santa Fé, N. M. (See his letter in sec. VII.)



A Camanche Spinning.

This is another phase, in which the thread-making idea has manifested itself among the red race, and an interesting one it is. The spinner has a small stick, which she holds horizontally in one hand, and on which she winds thread, as on a spindle, as fast as it is spun. The bunch of cotton is itself twirled round, by means of a short and small rod, passed through the lower part, with its ends projecting. A pebble is commonly fastened to the middle of this stick—see *d*—and serves as a fly to keep up the motion, and to assist by its weight, in drawing out the thread. To keep the stone and stick in their place, a piece of yarn is wound loosely round the bunch. The length of thread is seldom over six or eight inches, before being wound up on the stick. In this singular process, the classical mode is completely reversed—the spindle, or that which corresponds to it, is held at rest, and the distaff put in motion, in which respect the operation is unique. The idea of increasing the momentum of the whirling mass, by the introduction of a weight into its centre, is here realized.





Navajoes Spinning.

Two pieces of board, or shingles, are pinned to opposite sides of the fork of a small tree or stump. A spindle (being a smooth rod ten or twelve inches in length,) is passed through, and made to turn in them, as in two journals. See the section S, where *a, a*, is the spindle, *b, b*, the boards, and *c*, a pin to keep the spindle in its place. To whirl the spindle, a cross stick *d*, is tied to the large end, as represented. Sometimes a stone is folded in a rag, and fastened to each end of the cross stick, and answers the purpose of a rude fly wheel. When a suitable stick, having a branch at right angles, can be procured, the cross stick and spindle are of one piece, as at S. A notch is made at the small end of the spindle, where the thread unites to it, and thus, while one girl turns the spindle, another, with a bunch of loose cotton, supplies it, and as the thread lengthens, gradually draws backwards. As soon as a full length is twisted, it is wound round the spindle, and another length added, and so on till the spindle is fully charged. The thread is then wound off into a hank, and the spindle set to working again.

These illustrations of primitive art possess a deeper interest than their relation to a few Indian tribes, and a more extensive one; they are types of thought, more or less common to the species, to barbarians and semi-civilized of all times; such as we ourselves would be led to adopt, were we thrown upon our own resources, without any knowledge or recollections of the subject.





Aztec girl weaving—From Mendoza's collection.

It is difficult to determine from this figure, whether the shuttle was developed in ancient Mexico. It is not represented, and appears not to have been attained any more than the distaff. The loom is like those now used by American Indians. Col. Emory, after speaking of the Pimos spinning, says: "Led on by this primitive display, I asked for their loom by pointing to the thread, and then to the blankets, girded about the woman's loins. A fellow stretched in the dust sunning himself, rose up leisurely and untied a bundle, which I had supposed to be a bow and arrow. This little package with four stakes in the ground was his loom: he stretched his cloth and commenced the process of weaving; he had no shuttle, the warp being passed across the woof, a thread at a time, by a long wooden needle. One of the rods in the preceding figure, was doubtless designed to represent a needle, and used in the same way."

If the figures here introduced, truly indicate the progress made by the Aztecs, in spinning and weaving, their advance was very moderate, and though very creditable work might be made with the weaving apparatus by individual skill and patience, it would seem that few or no attempts had been made to render it more facile and efficient. The same remark is, however, applicable to the loom of Asia and Africa. It is worth observing, that the dress of females pictured above, indicates a decided improvement on that of less civilized tribes. Aztec women and girls wore pantalettes and a species of tunic, with short sleeves and ornamental borders; not unlike Chinese female costume, save in the brevity of the sleeves. Amulets or keepsakes suspended over the neck, and resting on the bosom, seem also to have been common.

Modern Peruvian Indians spin without the distaff, and their loom is precisely like the ancient one just figured; the shuttle, or what answers the purpose of one, being a long thorn needle which is passed through the woof, thread by thread. Every piece woven is of the precise width wanted, whether for garments, coca bags, or aught else—no waste by cutting. Ancient specimens of cloth of excellent execution, have been found in tombs. The length of the needles varies with the width of the piece to be wove.

That very fine fabrics were produced in old Mexico, and by implements, little if any better than those here figured, is doubtless true. The highly colored accounts by the conquerors, are believed to have been no more so, than what the fineness of goods which they saw warranted. Indeed some of the richest of modern shawls and dresses, are turned out of looms of Persia, Egypt and Hindostan, but one degree advanced beyond those of the Aztecs. Personal tact and skill, are everything with semi-civilized artizans. The ancient spindle and loom of the east, singularly enough, are still preserved and used for special purposes in modern Rome, precisely as they were thirty



or forty centuries ago. A recent writer on the Pallium, an ecclesiastical robe of lamb's wool, says, there stands about a mile outside the Porta Pia, on the road to Tivoli, an old convent of nuns attached to the still more ancient church of St. Agnes. These nuns are poor, and rarely do any of Rome's high-born damsels enter the cloister of this lonely and neglected sisterhood. They have got a small paddock attendant to the monastery, and therein keep a couple of sacred lambs, not necessarily of the Merino breed; but still proud and happy ministrants of their wool for the texture of this noble decoration. The sisters spin it, not by any new fangled jennies, but on the old patriarchal spindle, and weave it in a loom of which the pattern might date from the days of Penelope.

*Concluding remarks on Spinning.*—To the substitution of circular for straight motions, and of continuous for alternating ones, may be attributed nearly all the conveniences and elegances of civilized life. It is not too much to assert, that the present advanced state of science and the arts, is due to revolving mechanism. We may speak of the wonders that steam and other motive agents have wrought; but what could they have done without this means of employing them? The application of rotary in place of other movements, is conspicuous in modern machinery, from that which propels steam ships through the water, and locomotives over land, to that which is employed in the manufacture of pins and pointing of needles. It is by this, that the irregular motion of the ancient flail and primeval sieve, has become uniform in thrashing, bolting, and winnowing machines—hence, our circular saws, shears and slitting mills—the abolition of the old mode of spreading out metal into sheets with the hammer, by the more expeditious one of passing it through rollers or flatting mills—and hence, revolving oars or paddle wheels for the propulsion of vessels—the process of inking type with rollers in place of hand-rollers—rotary and power printing presses—and revolving machines for planing iron and other metals, instead of the ancient practice of chipping off superfluous portions with chisels, and the tedious operation of smoothing the surfaces with files. But in few things is the effect of this change of motion more conspicuous than in the modern apparatus for preparing, spinning, and weaving vegetable and other fibres into fabrics for clothing. The simple application of rotary motions to these operations has revolutionized the domestic economy of the world, and has increased the general comforts of our race a hundred fold.

The birth of the arts here, and not least among them that of the humble one of spinning, is related to a problem of American ethnology of great and increasing interest—the early occupancy or first peopling of this half of the earth. Were there through countless ages, no eyes and hearts here to respond to the smiling heavens—none to taste the teeming fruits and inhale the aroma of flowers—was the placid atmosphere never rippled by the prattle and laughter of children—nor the song of a bird, nor the movements of a quadruped arrested by the sight of one of the race ordained to rule over them; until a few straggling members of that race arrived (perhaps casually) from abroad, to claim the splendid heritage? If the red man was not indigenous to the soil—to the manor born—if the first settlers were aliens, how natural the desire to know who they were? whence they came? and how? and when? and over what spots the first pre-emption rights extended? To ask—have they left no memorials in the languages that have come down; in legends, manners, customs, traditions, religious observances and rites—no sign manual in arts—in utensil, arms, and other relics extant. Have they left not 'their



marks' in earthworks—those most lasting of records—in quarries and entrenchments,—in mines, tumuli and mounds?

It is reasonable to suppose—and difficult to suppose otherwise—that if no human form was ever reflected from the surfaces of the lakes and rivers of this vast expanse, no human voice heard in its glades and forests, the imprint of no human foot left on the sands, until colonized from another continent, the arts of that continent must have been considerably advanced ere the means of transport or inducements to emigrate were evolved: and under any circumstances a knowledge of the most essential would be brought over. Of these, such as related to the domestic habits and occupations of women would be prominent, and spinning among the foremost. When once introduced, this could not have become lost—indispensable as it is to the savage and semi-savage condition—while the original process or processes, whencesoever derived, unless superseded by better, would be continued in vogue by them and their posterity.

Now, if the first mothers of the American race emigrated from any of the early advanced sections, or outskirts of Eastern civilization, they brought the distaff and spindle whirling free in air, with them: yet nothing of the kind was found at the conquest. It cannot of course be imagined that they, or their descendants, could have been induced to throw the former away, and embarrass the movements of the latter in a calabash or basket. Efficient previous practice, and acquired habits and expertness, could never have been laid aside for such rude and laborious, and unproductive substitutes.

We know that the distaff and spindle have never been lost when once known in the old world: neither civil commotions, political revolutions, nor duration of time affected them—witness Egypt, Assyria, Greece, Italy, Carthage, Persia, Scythia, Asia-Minor, and all the great and small theatres of past history. The laws, learning, science, arts, and even races which once flourished in those countries, have mostly vanished, but women still spin there as they did from thirty to forty centuries ago—and so it is here also; the principal mechanical devices of the old Mexicans, Nicaraguans, Peruvians, Chilians, &c., are no longer known; the means by which the stone architecture, the basaltic and porphyritic sculptures of Cusco, Uxmal, Copan, Palenque, and numerous other Aztec remains scattered over the continent, were achieved, are a puzzle, yet the household labors of Indian females in those lands remain unchanged; they spin and weave with the same apparatus and embroider as did their kindred in and before the times of Atabalipa and Montezuma.

Admitting that repeated emigrations hither took place at periods remote as, or even behind that of the Illiad and up to the 12th century of our era—that arrivals, designed or fortuitous, thus occurred, and on both or either of the Atlantic and Pacific coasts—we might still more confidently expect to find the distaff and spindle of the other hemisphere domiciled in this. If they came at all they came in hands practised in their use and tenacious of their worth. But no—from the Cape of storms at the South to the limits of human abodes at the North, instead of them the most awkward contrivances prevailed when the white faces came, and such still are found to prevail. The inference would therefore seem to be that the first colonists and their successors for many ages came before spinning was known in their native homes, or at least before the distaff had been added to the spindle, and that the art as practised by the Aztecs and their successors in Central America at the present day, is purely of aboriginal development—is of remote antiquity, and had not before



the conquest come in contact with the better processes of the other hemisphere.

Of the three epochs of human condition indicated by the materials of which implements and weapons have been made—stone, bronze and iron—it is uncertain whether the distaff was ever developed under the first—the probabilities are that it was not. In the remote periods in which it is mentioned, some of those who possessed it had progressed far into the second, and some had entered on the third. The great mass of the occupants of this continent at the conquest were found toiling in the cycle of stone; while the Mexicans and Peruvians, the most advanced of Red nations, had discovered and applied the properties of copper and some of its alloys: they had entered on the second, but had not progressed far in it. Had they possessed bronze weapons equal to those of the heroic ages, they might yet have preserved, in a measure, their independence and nationalities.

Clothing is second only to food, and clothing is woven thread. The magnitude and all but paramount importance of the manufacture of thread—including that made of flax, silk, cotton, worsted and other fibrous bodies—afford matter for great surprise. Compare the products of the distaff and spindle of old with that of our mills, and how difficult to realize the change which modern mechanism has wrought! The yearly amount—the lineal extent—of thread now made, who can measure it? It would reach from our planet to neighboring ones, and in time will suffice for a net-work to include the farthest in the system. Turn from the wood cut illustrations here given of ancient, and not yet obsolete, processes to modern manufactories, and it would seem that while Grecian Helens, Syrian Naahmahs, or Mexican Penelopes were preparing an annual supply of clews for their families, the myriads of spindles now twirling by steam and water, produce enough to use the Asteroids as balls on which to wind it, and as bobbins from which to reel it. Even a century ago, a single mill driven by water, is said to have spun or twisted 73,726 yards of silk—i. e.—between 40 and 50 miles at each revolution of the motive axle.



## VI.

## EARLY MACHINERY IN AMERICA.

To preserve the original forms and features of machines which have been among the foremost in changing the primitive wild aspect of the continent—of opening it to civilization's career,—is not simply a matter of passing interest, but one of present duty, and of future recompense ; for when an account of the chief agents employed in working out the great things already achieved, and others yet greater in prospect, comes to be written, the principal materials will be looked for, and should be found, in reports of this bureau. As a part of American history, this ought to be done, because the true annals of a people, their most reliable, unmistakeable, unpervertible, durable and natural archives, are THEIR ARTS—their contributions to practical and productive knowledge ; ideas they disclose and apply, to extend and refine the realities of life, compelling nature to yield up new treasures, detecting in matter new properties, employing it in new combinations, moulding it in new forms, putting it to new uses, and drawing from it novel and beneficent results ;—all other knowledge of them might be lost, yet in these their genius, industry, morals, enterprise, and position in the scale of nations, would be seen and acknowledged.

We are careful, and justly so, to collect reminiscences of patriotic men of the revolution,—why not the venerable machines of that day, also ; since the industrial arts themselves, were then on the eve of a change, more radical than at any previous epoch, and as marked, extensive, and fraught with blessings to the world at large, as those relating to the civil and political rights of man.

By putting on file our early mechanisms, we shall have in them, so many data or starting points, from which to measure subsequent advances—to mark off the distances we and our successors may leave them behind.

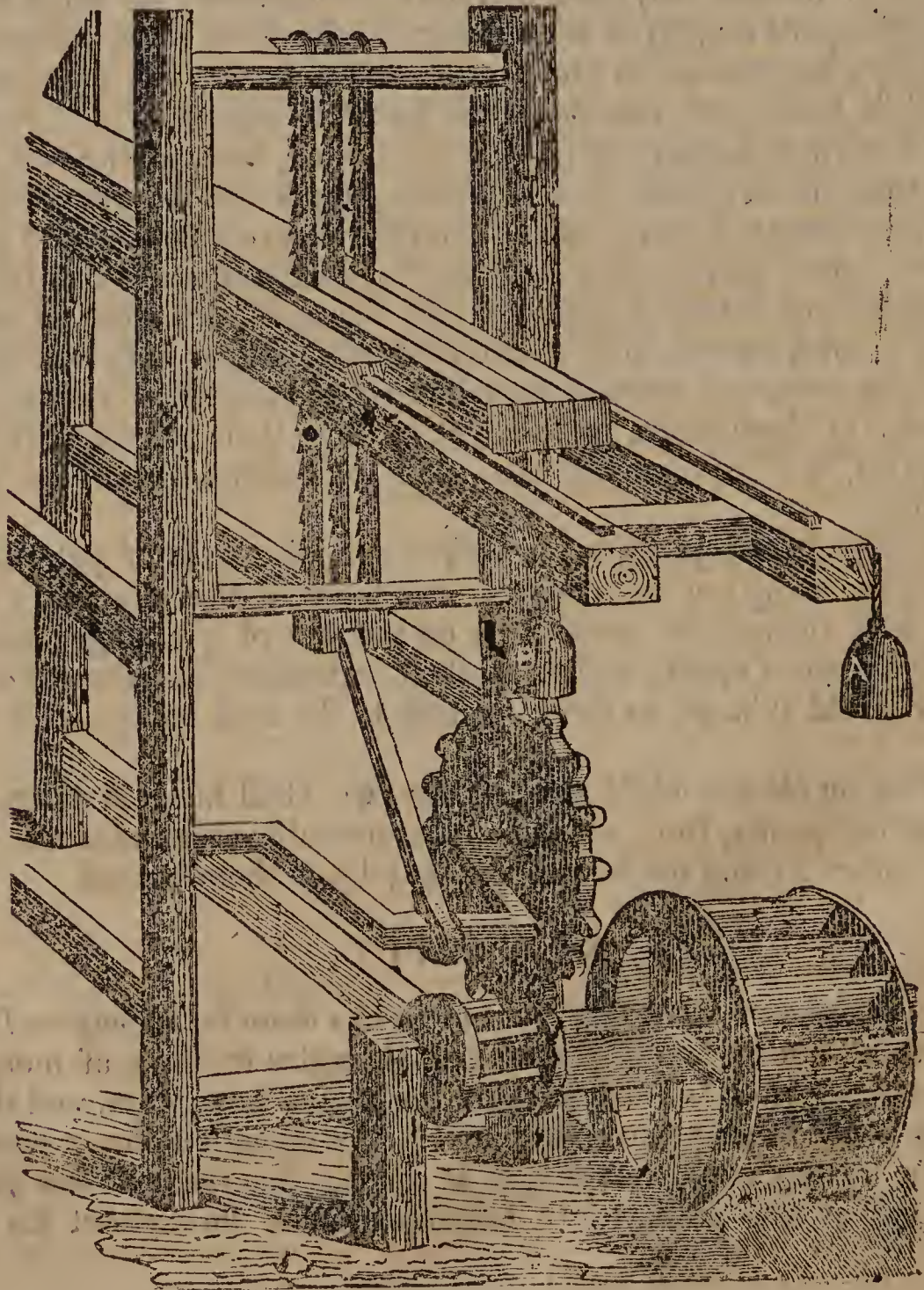
## SAW MILL.

Who ever thinks of what this instrument has done for society—of the value of its services from the times of Colonial struggles to those of independence and of empire ! How few call to mind the part it now plays, and the impetus it imparts in every upward movement ! An invention almost contemporary with the infancy of civilization, it is among the favored few that in one form or another, are ordained to accompany man throughout his destined career.



The axe produces the log hut, but not till the saw mill is introduced, do framed dwellings and villages arise; it is civilization's pioneer machine; the precursor of the carpenter, wheelwright and turner, the painter, joiner, and legions of other professions. Progress is unknown where it is not. Its comparative absence in the Southern continent, is not the least cause of the trifling advancement made there during three centuries and a half. Surrounded by forests of the most valuable and variegated timber, with water-power in mountain streams, equally neglected, the masses of the people live in shanties and mud hovels, not more commodious than those of the aborigines, nor more durable than the annual structures of birds. Wherever man has not fixed and comfortable homes, he is, as regards civilization, stationary; improvement under such circumstances, has never taken place, nor can it.

The modern saw mill, driven by steam, differs from those set up by the pilgrims at the East, and by the first planters at the South. An original portrait is given in an old tract, entitled—"Virginia's Discovery of silk worms, with their benefit, and the implanting of Mulberry trees. Also the dressing and keeping of vines, for the rich trade of making wines there. Together with the making of the saw mill very useful in Virginia, for cutting of timber and clapboards to build withall, and its conversion to other as profitable uses." By Ed. Williams. London, 1650.





*An Explication of the saw mill, an Engine wherewith by force of a wheel in the water, to cut timber with great speed.*

This engine is very common in Norway and mountains of Sweden, wherewith they cut great quantity of Dealbords; which engine is very necessary to be in a great Towne or Forrest, to cut Timber, whether into planks or otherwise. This heer is not altogether like those of Norway; for they make the piece of Timber approach the sawes on certaine wheels with teeth; but because of reparations which those tooth'd wheels are often subject unto. I will omit that use; and in stead thereof, put two weights, about 2. or 300. pound weight apiece; whereof one is marked A, the other B. The cords wherewith the sayd weights doe hang, to be fastened at the end of the 2. peeces of moving wood, which slide on two other peeces of fixed wood, by the meanes of certaine small pulleys, which should be within the house, and so the sayd weights should always draw the sayd peeces of moving wood, which advancing alway towards the sawes rising and falling, shall quickly be cut into 4, 5, or 6 peeces, as you shall please to put on saws, and placed at what distance you will have for the thicknesse of the planks or bords ye will cut; and when a peece is cut, then let one with a Lever turne a Rowler, whereto shall be fastened a strong cord which shall bring backe the sayd peece of wood, and lift again the weights; and after put aside the peece already cut, to take againe the sawes against another peece of wood. Which once done, the ingenious Artist may easily convert the same to an instrument of threshing wheat, breaking of hemp or flax, and other as profitable uses."

The idea of a thrashing mill here thrown out, nearly a century before Jethro Tull alarmed his superstitious neighbors by "wickedly constructing a machine for beating out corn without manual labor," will be new to many writers on agriculture.

The ancients used marble to an enormous extent, and according to Ausonius, mills driven by tributaries of the river Moselle, were employed in sawing it into slabs. But history has hitherto afforded no indications of timber having been slit into boards by water power, so early.

At the close of some general remarks on "Incomparable Virginia," "this ornament of the new world which nature has regarded with a more indulgent eye than she hath cast upon many other countreys,—whatever China, Persia, Japan, Cyprus, Candy, Sicily, Greece, the South of Italy, Spaine, and the opposite parts of Africa, to all which she is parallel, may boast of, will be produced in this happy country." "Duly considered for exactnesse of temperature, goodness of soyle, variety of staples, and capability of receiving whatever is produced in any other part of the world, Virginia gives the right hand of preheminance to no province under Heaven; she may, with as great justice as any country the Sunne honours with his eye-beames, entitle herself to an affinity with Eden, to an absolute perfection above all but Paradise;" &c., &c.

The writer inserts a list of staples and prices, interesting and worth preserving:—

*A valuation of the commodities growing, and to be had in Virginia: valued in the year 1621.*

And since those times improved in all more or less, in some  $\frac{1}{3}$ , in others  $\frac{1}{4}$ , in many double, and in some treble.

Iron, ten pounds the Tun.

Silke Coddies, two shillings six pence the pound.



Raw Silke, 13s. 4d. the pound, now at 25s. and 28 per pound.

Silke grasse to be used for cordage, 6d. the pound; but we hope it will serve for many better uses, and so yeeld a far greater rate, whereof there can never be too much planted. Of this Q. Elizabeth had a silke Gowne made.

Hemp, from 10s. to 22s. the hundred.

Flax, from 22s. to 30s. the hundred.

Cordage, from 20s. to 24s. the hundred.

Cotton wooll, 8d. the pound.

Hard pitch, 5s. the hundred.

Tarre, 5s. the hundred.

Turpentine, 12s. the hundred.

Rozen, 5s. the hundred.

Madder crop, 40s. the hundred; coarse madder, 25s. the hundred.

Woad, from 12s. to 20 the hundred.

Annice seeds, 40s. the hundred.

Powder, Sugar, Panels, Muscavadoes and whites, 25s. 40. and 3l. the hundred.

Sturgeon and Caveare, as it is in goodnesse.

Salt, 30s. the weight.

Mastick, 3s. the pound.

Salsa Perilla, wild, 5l. the hundred.

Salsa Perilla, domestick, 10l. the hundred.

Red earth allenagra, 3s. the hundred.

Red allum, called Carthagena allum, 10s. the hundred.

Roach allum, called Romish allum, 10s. the hundred.

Berry graine, 2s. 6d. the pound; the powder of graine, 9s. the pound; it groweth on trees like Holly berries.

Masts for shipping, from 10s. to 3l. a peace.

Pot-ashes, from 12s. the hundred, to 14. Now 40. and 35s. the hundred.

Sope-ashes, from 6s. to 8s. the hundred.

Clapboard watered, 30s. the hundred.

Pipe Staves, 4l. the thousand.

Rape-seed oyle, 10l. the tun; the cakes of it feed kine fat in the Winter.

Oyle of Walnuts, 12l. the tun.

Linseed oyle, 10l. the tun.

Saffron, 20s. the pound.

Honey, 2s. the gallon.

Waxe, 4l. the hundred.

Shomacke, 7s. the hundred, whereof great plenty in Virginia, and good quantity will be vented in England.

Fustick yong, 8s. the hundred.

Fustick old, 6s. the hundred, according to the sample.

Sweet Gums, Roots, Woods, Berries for Dies and Drugs, send of all sorts as much as you can, every sort by it selve, there being great quantities of those things in Virginia, which after proof made, may be heere valued to their worth. And particularly, we have great hope of the Pocoon root, that it will prove better than madder.

Sables, from 8s. the payre, to 20s. a payre.

Otter skins, from 3s. to 5s. a piece.

Luzernes, from 2s. to 10. a piece.

Martins, the best, 4s. a piece.

Wild cats, 18d. a piece.



Fox skins, 6d. a piece.

Muske Rats skins, 2s. a dozen.

Bever skins that are full growne, in season, are worth 7s. a piece.

Bever skins, not in season, to allow two skins for one, and of the lesser, three for one.

Old Bever skins in Mantles, gloves or caps, the more worne, the better, so they be full of fur, the pound weight is 6s.

The new Bevers skins are not to be bought by the pound, because they are thicke and heavy leather, and not so good for use as the old."



## VII.

## COMMUNICATIONS.

1. DYEING, SPINNING AND WEAVING, BY CAMANCHES, NAVAJOES, AND OTHER INDIANS OF NEW MEXICO.
2. TYPE FOUNDING IN THE UNITED STATES.
3. PAPER MAKING IN THE UNITED STATES.
4. REPAIRING CAST IRON VESSELS IN CHINA.
5. CHINESE TILE-MAKERS AT WORK.
6. PIN MAKING IN THE UNITED STATES.
7. SAN TORINA EARTH.

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*Dyeing, Spinning and Weaving, by the Camanches, Apaches, Navajoes, &c.—In a letter from Judge Peters, of Santa Fé, N. M.*

THOMAS EWBANK, Esq., *Commissioner of Patents,*

*Dear Sir:*—Fully appreciating the heartiness and zeal, with which you direct your researches into the various branches of inquiry and learning connected with your important bureau, I with great pleasure, but with diffidence, accede to your request, and give you such information with regard to the manufactures of wool and cotton, as I have acquired in my rambles among our western Indians; and more especially, among the Navajoes, Camanches and Apaches of Western Texas and Southern New Mexico. I have not been further west than Paso del Norte, in Texas—nor further north than Sonora, in New Mexico, and the surrounding country.

It is known to every observing traveller in those parts of our country—now no longer remote—that the brilliancy and durability of the various shades of primitive colors, and the few semi-colors that those Indians dye their wool in, are probably not equalled by the learned and scientific chemists of Europe, and our own country—an important fact, that seems not to have excited the curiosity of our otherwise enquiring countrymen. Should I be able, through your instrumentality, to bring to the public notice, such facts as well lead to enquiry and investigation, I should consider myself as having contributed somewhat to our national advancement in one branch of the arts at least, and that one of the most important.

The Camanche, Navajoe, and Apache Indians, present the curious spectacle of marauding bands of well mounted men; seemingly always committing predatory incursions upon their civilized neighbors, the Texans and Mexicans, apparently constantly on the alert for evil, and yet, possessing great skill in the more peaceful and benevolent habits of the herdsman and shepherd.

The depredations of the immense number of sheep, almost daily chronicled in our gazettes, are not made to appease hunger only; but to add to the



already immense flocks that overspread, as I have been told by them, the region of country lying west of the Sierra Madre, and east of California—a region as yet totally unexplored and unknown.

In the spring and summer of 1843, in company with an old friend—one of the Creeks who had emigrated west of the Mississippi, soon after the treaty with them in 1832—I travelled westward. My guide and companion had acquired a good knowledge of the language and habits of the Camanches, Navajoes and Apaches, and had probably not altogether abstained from joining them occasionally in their irruptions upon the settlements of their timid neighbors of Chihuahua and Sonoro. I found him “as one having authority,” and of course, very useful, both in the protection he afforded me, and the information he enabled me to acquire.

Among the first objects of interest to me, next to the matchless feats of horsemanship they perform, and which have so often been written of—was the number and variety of articles wrought by them, both useful and ornamental, and which might well vie with the skill of more civilized artizans. Among these were the beautiful fabrics composed of wool, and a kind of grass cloth, and some few of cotton. The object, however, of greatest interest to me, was the art of imparting to wool, &c. the beautiful colors I had often before admired, and to this I gave most attention. Like other Indians, I found them unwilling to impart knowledge voluntarily, and I had in my previous and long intercourse with the western tribes, early learned not to make inquiries that might excite their special attention to my designs. Our Indians are not disposed to impart to their white brethren, unless their citizens, any thing that might be useful out of their own country, in which particular, they are not unlike the Chinese, so that with the exceptions of their modes of dying and spinning, I will not now attempt to give you any certain account. The information I derived, and minutes made at the time, will now only enable me to give you the *modus operandi* of extracting their dyes, without being able to give you the names of the ingredients. The specimens I had been enabled to collect have become dried up, and many have been lost by crumbling, and I was not enabled to procure seeds or other means of re-producing the plant, and am not sufficiently a botanist to give you a technical description of them. I can give you the facts only, but these are of sufficient importance to awaken curiosity, and lead to the investigations of secrets by those more intimately connected with the subject treated of, and I think of sufficient importance to have that enquiry efficiently made under governmental auspices.

I may be mistaken, but to my apprehension, if Congress were to appropriate a sum of money sufficient to induce intelligent and competent persons to spend a year or two among the Camanches and Navajoes, and thus enable them to acquire an accurate knowledge of the plants used as dyes—procure seeds and plants—and obtain such practical information in their art of dying as would enable our manufacturers to acquire that art, it would be legitimately advancing the general welfare of our country in a greater degree than it does by applying to many uses the public treasure so often contributed.

The colors most admired by the Camanches and Navajoes are crimson, blue, purple and green; consequently these colors are the most common among them in all their shades; and though in their weavings they blend these with brown, yellow and other colors, with singular judgment and taste, yet it is the brilliancy of those that you most admire.

All their primitive colors are the products of the prairie and mountain flowers, and their semi-colors are composed of these and the inner bark and



roots of but few other plants combined in such proportions as the hue intended to be produced. They have no mineral dyes that I am aware of. Many of these flowers are small, indeed most of them; and the plants of low size, and begin to bloom in February, March and April, and continue till summer. During the blooming, the flowers are gathered early in the morning, with the dew upon them, and dried of the dew under a shade. The leaves are carefully picked off, the stems and such as have their petals covered with pollen of another color—*e. g.*—such as are purple or scarlet with petals of yellow or white pollen, are carefully separated from it. Particular flowers only are selected; all flowers of purple color not used to dye purple, and so of every other color, but such only as are known to make an indelible dye.

When the desired quantity of leaves are collected they are carefully and cleanly bruised and into them a small quantity of ley (I shall hereafter describe it) is put, but only enough to make a thick paste—which has the property of loosening the dye from the fabrics, and facilitating its extraction. A small bag shaped like a money purse, and but little larger, made of new dog skin, deer or wolf skin, tanned by the Indians in a manner peculiar to them, is used to compress the juice from the pulp. This bag, a foot or eighteen inches long and three or four inches wide, is half filled with the pulp. Two small handles of wood are stuck through the ends of the bag, about the length of a corkscrew handle, and used to grasp a firm hold, and as levers by which the bag is twisted until the juice is extracted through the pores of the skin, which are very open.

Whether extracted or not for immediate use, the dye is carefully bottled, in glass if it can be procured, or in small bladders, if glass is not to be had. I say small bladders, because if put away in large quantities, the dye sometimes spoils, they say, and produces dingy colors. When put away for future use the light is carefully excluded by overwrapping with skins, or any thing else, and generally buried in the ground under a shelter in which fire is not used, so as to exclude heat. The dyes however, are generally used soon as extracted, as during the winter the women prepare their best wool, and have it ready in the spring and summer for the process of dying.

The pulp after compression is put into a small quantity of the same ley above spoken of, and permitted to remain several hours to extract any remaining dye that might be in it, and undergo the same squeezing process until no dye remains.

The ley is made with care of the ashes after burning, of the green wood of a shrub very similar to the *Auralia Spinosa*, if it be not the same of a stunted growth. So careful are they of procuring this ash unadulterated, that they have dry parcels of it laid by with which to ignite the green wood, that the ashes may not be commingled with those of other woods. The ley is usually made in a large gourd, well cleaned and dried, with the butt end cut off, and a small hole bored through the point of the neck to drip from. The gourd is three quarters filled with the ashes considerably compressed in it, and by a bale or handle suspended from a bar containing several of them. Each is then filled with rain or pure river water: the point is stopped, and the water allowed to remain on the ashes for a day and night, and then permitted to drip into the vessel placed to catch the ley.

This ley is a little colored, and is clarified by the same process of filtration through clean white sand, or sand that has been used for the same purpose before—when clarified, the ley is used as before stated, and especially to set the colors, which seems to be the principal use of it. It has no caustic quality



after filtration, but an astringency peculiar to itself—rather a pungent than burning quality. It is sometimes used to dilute the darker dyes and produce lighter shades.

The wool to be dyed is washed in warm water until perfectly cleansed of the natural oil—using the root of a plant very abundant in Texas and southern New Mexico, as well as most of the southern States, of a very saponaceous quality, and known as the soap plant. In all their best fabrics—blankets, belts, leggings, &c., made of wool, their finest fleeces are used, and it is not unknown to many of our army officers and others, that the Navajoes give great attention to their management of sheep, and often produce fleeces almost or quite equal to the merino in fineness and softness of texture, by their skilful crosses and selections made after long and minute observations and care. A Camanche and Navajoe are as much delighted with the possession of a superior ram and ewe as of a fine horse, to the breeding of which they also give much attention. Von Thaer would not be more so with the possession of his finest buck. All their wool is dyed before spinning, and this is done by submerging it in the dye and letting it remain ten or fifteen days, the dye-pot being left covered: but during this soaking the wool is turned over once every day. Sometimes the lighter shades are imparted to the wool by soaking a shorter time—they say this produces a clearer tint. If not dark enough, the same process is repeated with fresh dye. I have been told by my guide, that the Camanches fumigate the wool after dying, over a smoke of the above described wood, to deepen the color, but I never saw it done.

Their green color is produced from the leaves of several plants, the juice of which is expressed in the same manner as from the flowers, and used in the same manner.

Their brown color is made from the inner bark, roots and nuts of the walnut and of other trees, much in the same manner as our farmer's wives now dye their wool for home-made jeans.

After the dying is finished, the wool is dried in the shade, and when well dried, exposed to the sun for a few hours; the dying is then complete, and the wool ready for spinning, except sometimes, perhaps, not always, they oil the wool slightly, and diffuse the dampness through it by rubbing and rolling it in the hands. I do not know the precise object of this, but they say it works better. This does not impair the color, for washing restores them to their first brightness.

It seems to be the peculiar quality of the *set* that gives the lasting brilliancy of the color. I have seen the Camanche blankets, after being used for months, and abused by being put under the saddle, saturated with sweat, rained upon, slept in upon the naked earth, and when carefully washed, present the colors again, as bright as newly dyed silk.

## THE SPINNING

Is what you would call twisting the thread; this is done altogether by the fingers, and somewhat similar to the ancient distaff, though reversing the order of operation. The distaff was used to wrap the raw material upon, and the spool or quill was used not only to wind the thread upon, but as the spindle to twist it. The Camanches reverse this order, and use the raw material for the spindle, and the spool only to wind the thread upon. See figure in Section VII. They use no distaff.



In spinning, a small portion of wool only is used at a time—a mess, say, of a quarter pound weight, and shaped like an egg, say four or five inches long, and two or three in diameter, is wrapped around with a string sufficiently tight to keep it together, but loose enough at the point to permit the wool to be drawn out for spinning the thread—a small stone, of an ounce or so in weight, is tied on the middle of a stick of about six inches in length, and inserted in the lower part of the bunch. This is to add weight to it without increasing the size, and is used as dead weight, to increase and continue the velocity when twirled round by the fingers.

The spinning is begun by first twisting a thread of five or six inches in length, which is wound around a stick of ten or so inches long, and half an inch in diameter, which is held in the left hand, and serves for the spool to wind the thread upon. After the thread is commenced, the spinning proper begins, and is then continued, by constantly keeping the bunch of wool swiftly rotating horizontally, by twirling it with the thumb and middle fingers; at the moment the twirl is given, a slight jerk downwards is made, to draw out the wool, and a simultaneous slight yielding of the left hand, to prevent the thread separating from the mass until the twist is given it, and when sufficiently spun, is wound upon the spool. They usually spin three or four or six inches at a time—and wind up every time. The thread is usually twisted hard, and always doubled before weaving. I have seen thread spun altogether by the fingers, and the spinning and weaving is by no means confined to the women; men are often engaged in it, and exhibit much taste and skill in devising the patterns, as well as blending the colors. After small parcels of the wool are well loosened by picking and straightening with the fingers, it is tied loosely together with a string, to prevent the bunch falling apart; or it is often put in a small bag, of four or six inches diameter, and drawn together at the mouth, leaving portions of the wool protruding from it in a point, to facilitate its being drawn out to form the thread. A weight of an ounce or two—usually a flat stone, is tied in the middle of a stick of six inches in length, and half an inch in diameter, and is enclosed within the wool, or the bag, near the bottom of it, and acts as a dead weight to facilitate the momentum when turning round. The ends of the stick project from the mass of wool like two handles, and are used to twirl it with the fingers.

The thread is usually about the fineness of our good Osnaburg, and spun sufficiently hard to twist readily when doubled, and makes the doubled thread not very hard. After the spinning is finished, and previous to weaving, the thread is measured, by *hanking* it over two pins a certain distance apart. This is only to ascertain the length of the thread required, and is then formed into a ball.

The Navajoes have another and a more artistic manner of spinning, for which it has been thought they were indebted to white instructors, but which they indignantly deny. Two boards, of two or three feet in length, and three to six inches in width, as may be procured, are pinned on opposite sides of the crotch of a tree of convenient height, or of two posts set in the ground near each other, or two trees growing near together. Two holes are bored in the boards, one opposite the other, and about one and a half inch in diameter. A limb of any kind of tree with a branch diverging at right angles, is procured. The larger limb is cut off about eighteen inches each way from the branch, so as to be about three feet long. The branch is trimmed off to fit the holes, and constitutes the spindle. The limb is used as the handle, and



as a fly to continue the momentum. The whole apparatus is unique, simple and efficient, and I would say an original one.

The spinning is commenced like the first process, by twisting with the fingers a short thread, then fastening it to the point of the spindle. The spinner has already prepared, by picking with her fingers, a quantity of wool which she has in her basket or bag, tied around her waist, or in a bundle like the one described in the previous process. A person twirls around the handle or fly, and the spinner keeps moving backwards as the thread is formed. The process is much the same as that by which our rope makers spin hemp by hand. A thread of six or eight feet in length, is spun before being wound up.

The Indian never spins until he or she has a specific work to perform. The size, plan, configuration, and every other requisite, is first determined. The quantity of thread required for any piece of work, is from long habit, pretty accurately known. I think I have said already, that all their weaving is done with a double and twisted thread. They waste no thread. They usually spin a small quantity and weave, and then spin again, and so on, until the work is completed. The process is the same for cotton, wool, grass, &c.

Weaving is the most elaborate of their arts, and they make beautiful work. Their blankets, or I should call them shawls, are often rich, strong and showy. Some have a resemblance to the Persian shawl. They frequently sell in Mexico for three hundred dollars, and I have seen them sell in New Orleans for two hundred dollars. I have one in my possession, taken by Gen. Houston at the battle of San Jacinto, which cost three hundred dollars. They are usually impervious to water, very heavy, and are rather plaited together than woven. The time occupied in making one of these, is from four to six, and sometimes eight months.

Very respectfully,

J. HENRY PETERS.

WASHINGTON, January, 1851.

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*Memorandum of Navajo Blankets, by R. H. WEIGHTMAN, of Santa Fé, Senator elect of New Mexico.*

#### NAVAJO INDIAN BLANKET.

The Navajo Indians live west of the Rio del Norte, about the base of the Rocky Mountains, between parallels of latitude  $32^{\circ}$  and  $35^{\circ}$ . They are far advanced in the arts of peace—cultivate the soil, raising wheat, maize, melons, fruits, beans, &c. They own large flocks and herds, and in the cultivation of breeds by judicious crossing, are said to have made some progress.

They are *Manufacturists*. The blankets made by them are of wool, and dyed in bands of black and blue (fast colors.) The red bands are made of the English red Indian cloth, unravelled and worked up anew. These blankets hold water. A bucket of water may be carried in one of them for miles.

They are skilful diplomatists—the proof of which is that since 1846 they have negotiated with the American authorities four or five treaties of peace, of which they have availed themselves only during their cropping season,



carrying on hostilities at all other times. These hostilities are carried on by them to gratify the feeling of avarice—to add to their wealth. They have driven off from New Mexico since 1846 stock to the value of at least \$500,000 (half a million.)

A specimen of their blankets (one of the coarse sort) is at the house of Mr. R. S. Coxe, Esq., F street, between 6th and 7th.

R. H. WEIGHTMAN.

Washington, Jan. 7, 1851.

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### TYPE FOUNDING.

Of contributions by inventors and artizans to the great work of mental development, there are three that have been conspicuous in bringing out the modern outburst of thought. But for them the genius of refinement had never made the progress she has; nor without them could she advance a single step further. Successfully employed in hastening a present, they are securing the future elevation of our race. Preventing retrogradation in intelligence, they add daily to the general stock, and are posting it up for the use of our successors. United, they have revealed a potency unknown to the ancients:—They are metallic types, paper and the printing press;—a triad of achievements in mechanical science unrivalled in importance and value. While water, wind, steam, electricity and the gases, serve to animate material mechanisms, these are the elements of a higher and mightier prime mover; one destined to agitate and expand the intellect of the world; to extend and perpetuate the peaceful reign of science and arts over the earth.

*Type Founding in the United States, by GEORGE BRUCE, Esq., of New York.*

Type founding is not a business of great industrial importance, but is valuable as being the fundamental branch of the letterpress printing business, and interesting as the great discovery of the 15th century, by which books, which were before possessed by the rich only, were brought within the reach of people of moderate means, encouraging the learned, and promoting the arts and sciences, through the cheap diffusion of knowledge.

As soon as type founding had been brought to a moderate degree of perfection, by forming copper matrices from steel punches, and a variety of sizes of type had been introduced, it must have been separated from the business of the printing office and made a distinct art; for the same moulds and matrices, with the constant employment of a few workmen, could supply all the type that was required for many printing offices, and thus save the expense of separate moulds and matrices for each one. It would indeed require a demand from many printing offices to furnish the business necessary for a single type foundry and to keep it in activity.

In the year 1683, as Joseph Moxon states in his *Mechanical Exercises*, the number of different bodies of type cast in England was ten: the smallest having 184 lines in a foot, and the largest  $17\frac{1}{2}$ . Each of these sizes or bodies required about 250 matrices. In 1789 the number of sizes or bodies in the British type foundries, amounted to upwards of twenty, of which the smallest,



called Diamond, had 202 lines in a foot, and the largest, called 12-lines Pica, had six lines. Four foundries at that time furnished all the types used in Great Britain and Ireland, in all their colonies, and in the United States, which had become then independent. It is not probable that these foundries employed more than fifty casters and a hundred other persons, or altogether 150 persons. This must seem a very small number, though probably over-rated. A caster's work is stated at from 3,000 to 4,000 letters in a day. Take the highest number, and supposing it to be of the body called Long Primer, having 90 lines in a foot, it will amount to 10 lbs., and in a week to 60 lbs. Ten such casters would produce 600 lbs. in a week; a quantity quite sufficient to print the largest newspaper published at that time, and to last twenty years, if used only for a weekly issue of 1,000 impressions.

The number of Printing offices in the United States, when independence was declared, could hardly have exceeded fifty, of which 37 published newspapers; and the annual importation of types could be supplied by the work of two casters. This constituted the difficulty of introducing type founding; the demand was necessarily too small for the proper maintenance of one, even if all the printers had united in support of a domestic establishment. Hence every attempt to establish before the revolution, and there were several, failed, as might have been foreseen. In 1790, the number of newspapers was 70, and some of them were published daily. The population and prosperity of the country after the revolution became actively progressive; and in 1796, when the exports of the year amounted to \$60,000,000, the duties on imports were raised to 15 per cent. ad valorem, the inhabitants numbered 4,500,000, and the printing offices had increased to 150, the favorable moment at length arrived.

Type founding, unconnected with any other branch, was then commenced in Philadelphia, by Archibald Binny and James Ronaldson, natives of the city of Edinburg, where Binny had carried on the same business. Their assortment was not extensive, but it embraced the essential fonts, Brevier, Bourgeois, Long Primer, Small Pica, Pica, and Two-line letters. They were obliging and attentive, and in twenty years made a fortune. They improved their foundry according to the increase of printing and the consequent demands of the trade, extending their assortment from Pearl of 180 lines in a foot to 12-line Pica, having six lines. They made an important improvement in the type mould, by which a caster could cast 6,000 letters in a day with as much ease as he before could cast 4,000.

According to Holmes' American Annals, about 200 newspapers were printed in the United States, in the year 1801, of which 17 were issued daily, 7 three times a week, 30 twice a week, and 146 weekly. There must also have been at the same time as many as 60 offices engaged in miscellaneous printing. The whole business had increased three-fold in eleven years. Another type foundry was put in successful operation in Baltimore, about 1805, by Samuel Lower & Co. It had in it some moulds and matrices which had been used by Christopher Lower, who printed in Germantown near Philadelphia, and cast his own types, in 1740. He printed with German characters; but now the foundry was revived with excellent Roman and Italic letters, and among other extraordinary things it had the size called Diamond, with a smaller face than had ever been cast before. It was the smallest type in the world.

The demand for type was very brisk till the war of 1812 commenced, and the foundries were generally three or four months in arrears in their execution.



of orders. The names of the newspapers published in the United States, in April, 1810, are given in Thomas's History of Printing, and amount to 359, of which 27 were daily papers; 38 were printed twice, 15 three times, and 279 once in a week. Add those required for general printing, and the whole number of offices could not be less than 500, being an increase of 240 in nine years, and some of them using several thousand pounds of type for book printing.

In 1811, Elihu White established a Type foundry in New York. He had been long engaged, in connection with Mr. Wing, in the manufacture of printing types, at Hartford, Connecticut, upon a plan of their own invention, by which 20 or 30 letters were cast at once, and had brought it to a useful degree of perfection; but now, abandoning the invention, he adopted the old plan of casting, and having a good assortment of faces, and bodies, his removal to New York was a great convenience to its printers, and they gave him a very satisfactory support. But the principal business in type founding still continued for some years to be done in Philadelphia.

In 1813, another type foundry was begun in the city of New York, by D. & G. Bruce, principally to cast types for their own use. They had carried on book printing for seven years, and had now become acquainted with the stereotype art—Mr. David Bruce, having visited England, in 1812, and acquired it by purchase and actual labor. For ordinary printing, it was customary to level off the body of the type at the face end, or shoulder, as it is usually called, which unfitted it for making a strong stereotype plate in the most approved way: hence, the necessity for casting type expressly for stereotype. Their first font was Bourgeois, with which, they cast two sets of plates of the New Testament, the common school Testament, and sold one of these to Matthew Carey, of Philadelphia, retaining the other for their own business. But these were not completed till 1814. In 1815, they cast the plates of the 12mo. School Bible, on Nonpareil type, prepared like the Bourgeois, at their own foundry expressly for stereotyping. They thus gave the first stereotype School Testament and School Bible, to America; but not the first stereotype book. John Watts, of England, also commenced stereotyping in New York, in 1813, and completed the Westminster Catechism that year, a volume of 120 pages, 12mo. David Bruce, invented the planing machine for equalizing the thickness of stereotype plates, which is now used in every stereotype foundry in the United States. The process of stereotyping is, however, entirely different from that of ordinary type founding, and it is, therefore, generally carried on as a separate business, or connected with the composing department of a printing office. Twenty compositors, and two proof-readers, will furnish full employment for one moulder, one caster, and three finishers, who will, among them, complete on an average, 50 pages of octavo per day. There are now sixteen of these stereotype foundries in the city of New York, employing about 400 persons. Probably 600 more may be employed in the stereotype foundries of other cities and towns of the United States. Altogether, 1000 persons are employed in stereotyping, and cast daily, what is equal to 2000 octavo pages, in doing which, in addition to imported antimony and tin, they use up 3,300lbs. of good American lead.

In 1818, or soon after, a type and stereotype foundry was established in Boston, and another in Cincinnati, principally through the enterprise of the late Elihu White, who having the means of multiplying matrices with facility, took this method for the extension of his business. Others followed his example, and type foundries were established in Albany, Buffalo, Pittsburg,



Louisville and St. Louis, with several additional in New York, Boston, Philadelphia and Baltimore. The business in fact was overdone, and failures and suppressions took place, as competition reduced the prices of types.

The mode of type founding has latterly undergone some important changes, which must no doubt be considered improvements. First among them, is the introduction of machine casting, in which a pump forces the fluid metal into the mould and matrix, and gives a sharper outline to the letter than was formerly given by the most violent throw of the caster. The old practice of casting only a single type at a time remains. The first idea of this machine originated with Wm. M. Johnson, who obtained a patent for it in 1828. Elihu White, put it into use in his type foundry, and persevered in using and trying to improve it as long as he lived; but he did not succeed in removing the greatest fault, which was a hollowness in the body of the type cast by it, that inclined them to sink under the pressure of the printing press. Other machines for casting printing types, have been brought forward within the last ten years, and various modifications and improvements have been made in them, which have at last commended them to general use. By their use three times the quantity of type that was cast by Binney & Ronaldson's improved mould, is now cast in a given time, and nearly five times the quantity that was cast by the common hand mould, fifty years ago. This improvement has passed into Europe, and been adopted by some of the German type founders; but in Britain, it has found no favor, and types there, are still cast in the same kind of mould as was used two hundred years ago, or in the earliest known type founding, at the rate of 4000 letters in a day.

The next improvement to be mentioned, is the application of electrotyping to the formation of matrices, by which a great saving of labor is effected. In old fashioned type founding, the original of each character, is formed on a separate steel punch, which being hardened and tempered, is driven into copper a 16th of an inch or more to form the face of the type, called a matrix. This matrix being adjusted to the mould, which is to form the body of the type, is then ready for casting. If the punch with its matrix be of a very plain or simple character, it will have cost two dollars, and have occupied a day of one workman, though generally, the punch and matrix are made by different workmen. If the punch be of a fancy character, with scrolls and figures in it, requiring tedious engraving with much nicety and mathematical accuracy, it may occupy many days to cut it, and may be worth fifty dollars; but more commonly a fancy or ornamental character costs from five to ten dollars. Our type founders generally adhere to the old way of getting matrices for the fonts, commonly used in printing newspapers and books; but stereotyping is resorted to for many of the ornamental fonts and borders. The French have produced a great variety of fancy types within the last fifteen years, and offer to sell matrices of them for fair prices, but even such matrices without the punches come high. They also sell the type, which being brought to this country, are used by our type foundries, to produce electrotyped matrices, from which similar type can be cast, and thus a very great saving of time and money is effected.

It may seem unfair to the moralist, that the works of a laborious artist should be taken in this way without compensation, and used in competition with him in every market to which our manufactures are admitted. In that view it is a hard case, no doubt. But the type founders are not wilful wrong-doers in this matter. They have been accustomed to think, that when they buy an article, they may use it as they please, there being no law restraining



them. They have been educated in this belief, having constantly before them the practice of booksellers, who buy a foreign book, and re-print it in a cheaper style than the original, and then thrust it into every accessible market to the exclusion of the author's sales, and the ruin of his pecuniary prospects. The bookseller, however, while cutting off the author's profits, contributes handsomely to the spread of his fame. This the type founder cannot do; and here, therefore, the parallel ends.

Not foreign articles alone are thus copied by the American type founders. Any article that is saleable, and got up in good taste by one type founder, is instantly electrotyped and cast by others; for there is no law to protect the peculiar property of the original producer, although the art for securing designs, &c. may seem to have a leaning that way. Types cannot have the date of the patent on each one as the law requires for a patented article; and to put the date on the wrapper would only serve to give the notice to the first purchaser. It might seem to be an evasion of the law, and not a fulfilment of its provisions, exposing the patentee to a fine of one hundred dollars upon every complaint, which of course would be made whenever he attempted to assert his patent right.

Perhaps, however, the law was not intended for the protection of printing types, and all this reasoning is useless. But, no doubt, there is a desire to protect every branch of industry, and type founders might be completely protected, by simply permitting them to file an impression of a new article with small expense, as the title page of a book is now filed to secure a copy-right. This is the practice in some parts of Europe, particularly in France and England, where it is called registering.

The demand for printing types in the United States, is continually increasing at a prodigious rate, both for newspaper and miscellaneous printing, and probably the number of printing offices amounts to 4,000. A writer in the New York Tribune, about six months ago, in a sketch of the newspaper press, estimated the whole number published at 2750, of which, nearly 250 were published daily, as follows: New York has 15; Boston, 11; Philadelphia, 8; Cincinnati and Pittsburg, 9; Albany, Nashville and Rochester, each 6; Baltimore, St. Louis, Charleston, Memphis, Buffalo, New Haven, Detroit and Chicago, each 5; Washington, Louisville, Richmond, Norfolk, Troy, Brooklyn, Hartford, Providence, New Bedford and Portland, each 4; Mobile, Savannah, Wheeling, Syracuse, Cleveland and Columbus, each 3; Portsmouth, N. H., Harrisburg, Newark, Oswego, New London, Lowell, Montgomery, Vicksburg, Zanesville, Milwaukie and Wooster, each 2; with some fifty other places which have one each. California is omitted in this enumeration, inadvertently of course, but it had on the 1st of September, at least 13 newspapers, of which 8 were published daily.

The writer in the Tribune estimates, on apparently good information, that the 15 dailies in New York, publish 125,000 papers per diem; the 11 in Boston, 70,000; the 8 in Philadelphia, 75,000; the 5 in Baltimore, 30,000; the 10 in New Orleans, 50,000; and the 201 other dailies, 1200 each. The aggregate makes 590,000 papers for the daily circulation, or 184,080,000 for the annual circulation of the daily papers of the United States. He then assumes that of the 2500 tri-weeklies, semi-weeklies and weeklies, there are 50 which circulate 30,000 each, making 1,500,000 in the aggregate; 50 which circulate 10,000 each, or 500,000 in the aggregate; and the remainder circulate 1000 each, on an average, or 2,400,000 in the aggregate. The whole annual circulation is thus estimated at 412,880,000.



It may be assumed as certain, that with the enlarged size of the present newspapers, each one, on an average, requires 800lbs. of type for its composition, or 2,200,000lbs. for the whole 2750 papers; and if it be also assumed that 1,500,000 impressions are all that can be taken from type on an average of large and small editions, then it will follow that in printing 412,880,000 papers in the year 1850, the type will sustain a wear equal to the destruction of one-tenth of the whole, or 220,000lbs., which may in great part be returned to the foundry, to be re-melted.

There are now four type foundries in Boston, seven in the city of New York, one in Albany, one in Buffalo, three in Philadelphia, one in Baltimore, two in Cincinnati, and one in St. Louis; in all twenty. The seven in New York cast about 2000lbs. of type per day, and employ about 350 persons. The 13 foundries out of the city of New York, are estimated to cast 2400lbs. of type per day, and to employ 450 persons. The aggregate production daily is 4400lbs., by the efforts of 800 persons. The metal used is a mixture of lead, antimony, and tin, in different proportions, suited to the kind of type to be cast, but containing on an average, 75 per cent. of lead. The consumption of lead, therefore, amounts daily to 3300lbs., and yearly to 1,029,600lbs., subject to a deduction for old type returned to the foundries to be re-cast, probably amounting to 20 per cent., or about 205,920lbs., leaving 823,680lbs. for the quantity of new lead consumed per annum.

These foundries not only supply the printers of the United States, but most of the printers in Canada, some in the British West India islands, the Spanish and Danish islands, Mexico and South America. The quality of the American type will bear a favorable comparison with the European, and in cheapness it is unrivalled. The following are the prices at which they have been sold for the last fifty years, given at eight different dates, and naming only the principal and most useful sizes.

Names of Bodies.	1801.	1806.	1811.	1819.	1827.	1831.	1841.	1850.
Pica, . . .	\$0.35	\$0.44	\$0.55	\$0.44	\$0.42	\$0.36	\$0.38	\$0.30
Small Pica,	.40	.48	.58	.48	.46	.38	.40	.32
Long Primer,	.47	.56	.66	.56	.50	.40	.42	.34
Bourgeois,	.56	.66	.76	.66	.58	.46	.46	.37
Brevier,	.67	.76	.86	.76	.70	.56	.54	.42
Minion,		1.03	1.13	1.00	.88	.70	.66	.48
Nonpareil,	1.12	1.40	1.75	1.40	1.20	.90	.84	.58
Agate,					1.44	1.10	1.08	.72
Pearl,					1.75	1.40	1.40	1.08
Diamond,								1.60

I have thus endeavored to furnish an account of the rise, progress, and present state of type founding in the United States, agreeably to my promise; and although it may appear imperfect, I have not relied on my own recollections, which go back to Binny and Ronaldson's commencement; but have drawn some of the facts carefully, from various and well known sources.



## PAPER MAKING IN THE UNITED STATES.

IVY MILLS, PA., *Dec. 17th, 1850.*

Sir :—Your favor of Nov. 30th, came duly to hand. For want of documents and dates, my report of the rise and progress of the paper manufacture in the United States, must be very meagre, as I have to rely on my limited experience and observation, and on conversations with my father, long ago, to supply this deficiency.

About the year 1725, my grandfather, who was brought up to the paper business in England, came over and settled where I now reside. I have documents to prove that in 1732 he had erected a mill, and was manufacturing paper. The kind of paper then made, was what is called fullers' press-boards, such as are now used by clothiers to press cloth. I believe there was another mill a little north of Philadelphia, and one near Boston, similarly occupied. I believe also, there existed an act of Parliament at that time, prohibiting the manufacture of any other kind of paper in the colonies. As there were few books then published in the colonies, the progress of the paper manufacture was very slow, and so continued until about the dawn of the Revolution. My grandfather manufactured the paper for Dr. Franklin, who was publishing a newspaper in Philadelphia, and who was a frequent visitor at the mill. About the time my grandfather made the paper for the Continental money, he commenced making writing paper, supposed to be the first made in America. From the Revolution, until the year 1820, very little improvement occurred, that was important; very little machinery introduced for facilitating the operation. The mills increased in number in proportion to the increased quantity of newspaper and book publishing. About the year 1810, we began to experience a deficiency of raw material, (rags,) and were obliged to resort to Europe for supplies. These were obtained from all parts of Germany and Italy, and have continued increasing up to the present time. Whether the deficiency at home resulted from a real scarcity of rags, or their low price made it no longer an object to families to preserve them, I cannot say—but such was the fact.

At present we have an additional inducement to import our material. The article of cotton has here almost entirely superseded the use of linen for wearing apparel, and when much worn and reduced to rags, becomes a very tender substance; in fact, scarcely able to support its weight when made into paper. The foreign rags, we suppose average about 80 per cent. of linen, which, when mixed with the domestic cotton, imparts to the paper a strength and firmness, which it could not have without it. The best qualities of writing and printing papers, contain from 30 to 50 per cent. of linen, for which we are entirely depending on foreign countries. But as the use of cotton for clothing is yearly increasing all over the civilized world, we find the proportion of linen in imported rags, decreasing from 5 to 10 per cent. from year to year. We have an excellent substitute for this in our own country, did not its high price prevent its use—raw cotton—which makes a beautiful paper when mixed with the worn-out rags of the same material. In 1837–8, when the price was as low as 6 cents per pound, large quantities were manufactured into paper.

From 1820 to 1830, some efforts were made to introduce machinery from Europe. England and France were before us in its introduction. Several machines were sent out from England—some very imperfect, and the cost too



great for our manufacturers. The patronage then offered was no inducement to our own machinists to construct so expensive a machine; until 1830, about which time, Phelps & Spafford of Windham, Connecticut, made one which answered very well. Soon after, the country was supplied at a reasonable cost, and equal in quality to the best English. Not long afterwards, Howe & Goddard of Worcester, Massachusetts, commenced making them. I have reference only to the Foudrinier—the shaking endless wire-web machines. I believe these two establishments now make all these machines in the United States. The *cylinder* machine, more simple and less costly than the other, is in more general use; but the paper made on it, is not equal in quality. Notwithstanding, it does very well for news, and the various purposes which a coarser article will answer for. These are made in various places throughout the United States.

The interval from 1830 to 1840, was important for the vast improvements made in the manufacture by the application of this kind of machinery for that purpose. Also, by the introduction of the use of chlorine in the form of gas, of chloride of lime, and the alkalies, lime and soda-ash in bleaching, cleansing, and discharging the colors from calicoes, worn out sail, refuse tarred rope, hemp, bagging and cotton waste, the refuse of the cotton mills. These articles which heretofore had been considered only applicable for the manufacture of coarse wrapping papers, have, through the application of this bleaching and cleansing process, entered largely into the composition of news and coarse printing papers, and consequently have risen in value 300 per cent. A few mills possess machinery, and adopt a process by which they are prepared for the finest printing and letter paper. I have seen a beautiful letter paper made of cast off cable rope. Hemp bagging is an excellent material for giving strength, and is in great demand, especially for making the best newspaper. The cost of making paper by machinery, compared with that of making it by the old method, (by hand,) not taking into account the interest on cost, and repair of machinery, is about as one to eight. The present low price resulting from improved machinery; and the low price of printing by steam power has placed newspapers and books in the hands of all; and a great increase of production has followed within the last few years. I have no data by which I could furnish a report of the comparative increase within the last ten or fifteen years. The quantity now made, might be nearly ascertained, if the Deputy Marshals could report the number of *engines* in operation; I suppose 300lbs. of paper would be the average daily produce of each engine—taking into consideration the loss of time and power from a deficiency of water in the summer season. There has been a greater proportional increase of mills in the middle and western states within the last ten years, than in the east. Ten years ago, I suppose 80 per cent. of the supplies for Philadelphia, came from east of the North river; at present, I think there does not come 20 per cent. Formerly, a much greater quantity was sent west of the mountains, and large quantities of rags brought in return. In consequence of the greater number of mills in the west, particularly in Ohio, New Orleans, I am informed, is in a great measure getting supplies there. Formerly, they all went from the Atlantic states.

From the time of the Revolution, the quantity of paper imported has been gradually decreasing; and before the revision of the tariff in 1846, had dwindled to perhaps not more than 2 per cent. of the amount consumed, with the exception of wall papers, of which large quantities were imported and still continue to be from France. Since 1846, there has been an increase of



cheap French letter paper, but the amount is small compared with the whole amount of letter paper consumed—probably not more than 3 per cent. There is also a small quantity of ledger and letter paper brought from England; but as the American is quite equal in quality, the importation is gradually diminishing. Within the last two years, great ingenuity has been exercised both in England and in the United States, in trying to make a paper by machinery, to resemble the old fashioned hand made *laid* paper, (yet preferred by many.) To the eye, it is a pretty good imitation, but lacks the toughness, firmness, and surface of the hand made. By an experienced judge, the deception is easily discovered. Notwithstanding, large quantities have been used under the supposition that they were hand made. The reduced price of machine paper, has forced almost all manufacturers to abandon the old method. I believe there are only two mills in operation in the United States, in which it is made by hand, one in Massachusetts, and one of mine. There is a limited quantity of particular kinds, that can be better made by hand, than on a machine. In mine, is made bank note, laid letter, deed parchments, and such as are used for documents, that are much handled, and require great strength and durability. Within the last few years some improvement has been made in the finish of writing and printing papers, by the introduction of iron and paper calenders, for the purpose of giving a smooth surface. The finish of American papers, I think, is now equal to any in the world.

Very respectfully, your ob't sev't,

JAMES M. WILLCOX.

THOS. EWBank, Esq., *Washington, D. C.*

## CHINESE MODE OF REPAIRING CRACKED OR BROKEN VESSELS OF CAST IRON.

Perhaps no device can be named more characteristic of oriental ingenuity—of the most mechanical people of the east—than this. It is one that could only have occurred where ages of experience in the treatment of the metals had elapsed. The idea of an ordinary artisan fusing *iron* with a handful of charcoal, and handling the glowing liquid as if it were but melted wax or tallow, would be considered by our founders as belonging rather to romance than to reality. Every year thousands of vessels, large and small, are with us thrown aside—costly sugar pans of planters, and the more capacious vessels of soap boilers and brewers, as well as culinary cauldrons—that might be restored to soundness by this simple method, and at the most trifling charge.

In 1794–5, VAN BRAAM—the second in command of the Dutch embassy to Peking, and who afterwards settled in the United States, bringing with him the chain pump and other inventions of the Chinese—was exceedingly struck with the operation—its simplicity and efficiency. He appears to have been the first European who observed it. His account is as follows:

“During our short stay this morning in the village of *Fan-Koun*, I had an opportunity of seeing a tinker execute what I believe is unknown in Europe. He mended and soldered frying-pans of cast iron that were cracked and full of holes, and restored them to their primitive state, so that they became as



serviceable as ever. He even took so little pains to effect this, and succeeded so speedily, as to excite my astonishment. It must indeed appear impossible to any one who has not been witness to the process.

All the apparatus of the workman consists in a little box sixteen inches long, six inches wide, and eighteen inches in depth, divided into two parts. The upper contains three drawers, with the necessary ingredients; in the lower is a bellows, which, when a fire is wanted, is adapted to a furnace eight inches long and four inches wide. The crucibles for melting the small pieces of iron intended to serve as solder, are a little larger than the bowl of a common tobacco pipe, and of the same earth of which they are made in Europe; thus the whole business of soldering is executed.

The workman receives the melted matter out of the crucible upon a piece of wet paper, approaches it to one of the holes or cracks in the frying-pan, and applies it there, while his assistant smooths it over by scraping the surface, and afterwards rubs it with a bit of wet linen. The number of crucibles which have been deemed necessary, are thus successively emptied in order to stop up all the holes with the melted iron, which consolidates and incorporates itself with the broken utensil, and which becomes as good as new.

The furnace which I saw was calculated to contain eight crucibles at a time, and while the fusion was going on was covered with a stone by way of increasing the intensity of the heat."

Mr. Balestier, United States Consul at Singapore and United States Envoy to South Eastern Asia, during his recent visit to the United States, politely offered to procure any information for the Patent Office—agricultural and mechanical—that might be desired from the East.

Among other subjects of inquiry suggested to him, iron founding was named: an art of remote antiquity and brought to considerable perfection by the Chinese. The excellence and lightness of their hollow ware are proverbial; while the readiness with which they fuse and handle small quantities of the metal in the reparation of damaged wares excites surprise. The last operation Mr. B. had often witnessed, but without giving special attention to it. He promised, therefore, to minute down the particulars sufficiently in detail to enable any mechanic successfully to perform it. His letter is subjoined, and by it every thing is made clear. Van Braam leads one to suppose the sides of repaired rents are fused together or united as in soldering other metals, while from Mr. B's account, such is not the fact. The fluid metal in filling the crack is spread over it on both sides of the vessel, and thus forms a species of rivet.

MACAO, Feb. 6, 1850.

TO THOS. EWBANK, Esq., *Commissioner of Patents,*

Patent Office, Washington, D. C.

DEAR SIR,—According to your desire, I have carefully observed the Chinese manner of re-uniting and joining together cracked or severed cast iron vessels, so as to make them as useful as ever after an accident, which is as follows: referring you to the utensils used, which I have numbered as at foot, and have had put into a box directed to you, and shipped per United States ship *St. Mary*, Commodore *Geisinger*, bound home, and which the Commodore will hold subject to your order.

I procured the accompanying cast iron pan, measuring 12 inches in diameter, by 4 four inches deep. A crack of 3 inches was made in it in the first.



place, and in the second a piece was entirely broken off: giving rise to two distinct operations.

The operator commenced by breaking the edges of the fractures slightly with a hammer, so as to enlarge the fissures, after which the fractured parts were placed and held in their natural positions by means of wooden braces. The pan being ready, crucibles made of clay, were laid in charcoal, and ignited in a small portable sheet iron furnace, with bellows working horizontally. As soon as the pieces of cast iron with which the crucibles were charged were fused, it was poured on a layer of partly charred husk of rough rice, or paddy, which was previously spread on a thickly doubled cloth, the object of which is to prevent the sudden cooling and hardening of the liquid metal. Whilst in this liquid state it was quickly conveyed with the right hand to the fractured part under the vessel, and forced up with a jerk into the enlarged fissure, whilst with the left hand a paper rubber was passed over the obtruding liquid, inside of the vessel, making a strong, substantial and neat operation.

You will thus remark that the art of the Chinese for re-uniting cracked or severed cast iron vessels, of all sizes, consists in cementing them with cast iron, whilst in the liquid state.

I have the honor to be, dear sir,

Your most obed't serv't,

J. BALESTIER.

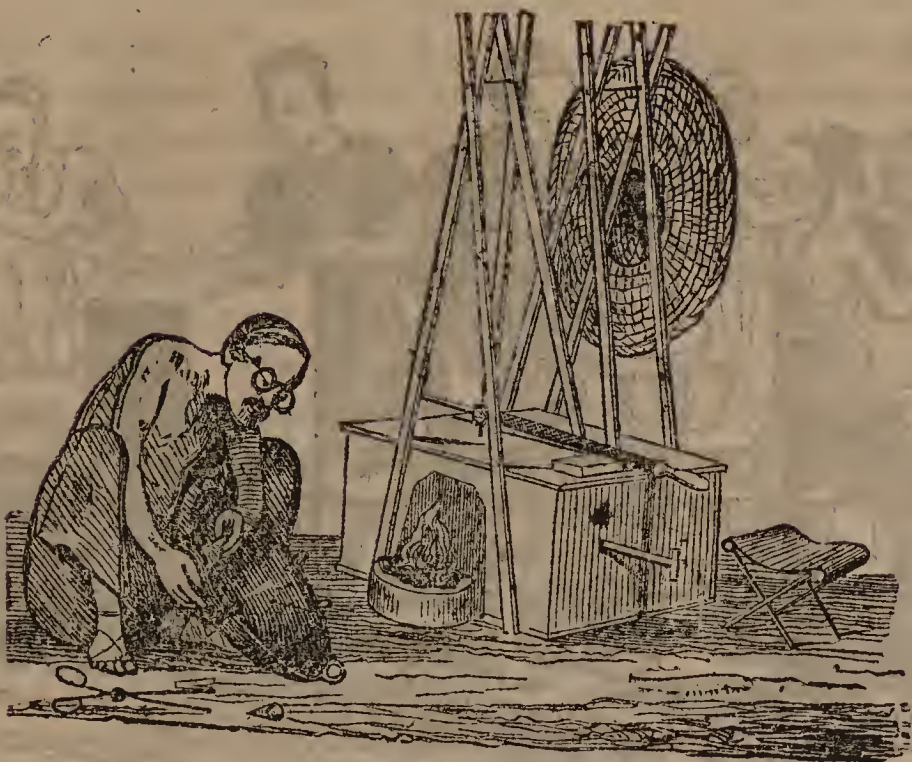
The weight of this pot is  $3\frac{1}{4}$  pounds. Except at the centre, where a part two inches over is left thick and flat for a base or foot to rest on, the thickness does not exceed, and in fact scarcely reaches  $\frac{1}{10}$  of an inch. The handles are cast on, but appear to have been first formed and inserted into the mould. This does not seem to have been of sand, as the inner and outer surfaces are smoother, and of a different appearance from iron cast in that material. Of the metal used for repairing this pot, Mr. Balestier has forwarded a lump that was not melted. It is part of an old kettle, and differs but little, if any, from our pot metal.

The crucible, not much larger than a thimble, is made apparently of the same material as our common sand crucibles; except the shape, it could not be distinguished from one of them.

The amount of one fusion seems not to cover more than half an inch of the crack, and hence in the piece inserted, no less than nine distinct applications of the melted metal are seen—resembling in the inside so many ragged wafers touching each other, while on the outside, where the metallic plaster was applied, there are the same number of rude protuberances.

Dr. Gale, one of the examiners of the Patent Office, has made, at my request, a chemical examination of a portion of the basin, and finds it a very pure white cast iron, containing scarcely any foreign matter, except a little carbon and silex, ingredients always present in cast iron.





The subjoined figure represents the itinerant artist with his portable forge, at work in the street. The front half of the wooden chest is his *Fung Seang* or bellows, a description of which may be found in Ewbank's *Hydraulics*. Its principle is that of the double acting force pump, and it is constructed wholly of wood, except the valves and packing of the piston, which are paper, and singularly durable. The long coarse file, with a prolonged smooth extremity to slide through a ring, fixed on the chest, is a common accessory to a tinker's budget. By the arrangement, he possesses a tolerably good substitute for a bench and vise, and can increase or diminish the pressure of the file on the object operated on, at pleasure.

#### CHINESE TILE-MAKING—BRICKS, &c.

The following paper is by George R. West, Esq., of this city. Mr. West, in 1843, accompanied, as artist, the United States Mission to China, and returned recently, bringing with him a portfolio of graphic sketches, illustrative of the arts, manufactures, &c., of the Chinese.

No people, existing or extinct, surpass these in mechanical ingenuity and resource. To them the rest of the world is indebted for printing, gunpowder, the mariner's compass, porcelain, and a thousand minor contributions to modern civilization. In all their industrial operations there is something more or less new to us. In the process of tile-making, here described, some good ideas are manifested, and they are not confined to working of clay, by any means. In neatness, expedition, and saving of labor, it may safely be asserted that nothing can be found comparable to it in the manual operations performed in European or American tileries. The rearing of a prism (see *a*, in the cut,) of the kneaded clay, of such an outline as to furnish accurately shaped slabs or slices, ready to fold round the tapered and contractile core, is worthy of notice. So is the union of four perfectly modelled tiles in one short tube, which the workman finishes as fast as another cuts off slices from the prism of clay, and quicker than a single tile is made, in the ordinary manner, by other people.





Chinese Tile-Making.

SIR :—Agreeably to your request, I hand you with pleasure a sketch and description of the Chinese process of moulding earthen tiles, at Tinghae, Chusan.

The tiles used for roofing in China, are only partially burnt. They resemble in appearance and texture, terra cotta, and differ in form from those used in Spanish countries, in having no recurvature at either side, a cross section being a portion of a ring or circle; see the cut where a double row of short tubes is figured, drying in the sun. The manufacture is very extensive and important, from the fact of tile roofing, with one exception, (thatching) being the only style adopted in the southern part of, and I believe, throughout the whole empire. A novel and ingenious method is practised, of moulding four in the form of a short conical tube, in the same time that would be required to mould one separately—an illustration of the original and interesting methods these people have, of accomplishing their desired ends with ease and precision, by means rude and simple, but at the same time efficacious. [Not more so, however, than the process of moulding sheet tin for lining tea canisters, which is familiar to every person who has visited Canton, or the process of mending fractured porcelain and the most delicate glass-ware, with numerous copper clamps. Such examples are very common, and it is useless to cite them here, as the same may be said, with truth, of all their manufactures, and every thing they do, from the beautiful embroidered crape shawl, to the pork fat candle.]

With the aid of the subjoined sketch, the manner of conducting the process of making four tiles at one operation, will be readily understood. Three persons are here represented, but I have often seen one alone go through the operation with surprising rapidity. One of the figures in the foreground is represented in the act of cutting a slice of clay from a high mass before him, with a gauge knife; another bending and uniting a slice over the mould or core, which he holds in his right hand, upon a small revolving table before him; another removing a tube just formed, to the drying ground. Two figures are represented in the background, kneading clay, &c. The two detached views at the foot of the sketch, are representations upon a larger scale, of the



core and gauge knife. The core or mould consists of a circular conical hoop of the desired height and diameter, and is so constructed as to spring inwards, to allow of its being easily removed after the tiles have been moulded over it. On its outer periphery are secured vertically, and at equal distances, four thin bamboo slats, which divide the mould into four equal parts; these are for the purpose of making incisions half way through the clay, so that the four tiles will be united in the form of a circular conical hoop or tube, preserving them in their true shape, and from all injury whilst undergoing the succeeding processes of drying and passing through the kiln. When the tiles are wanted for use, it is only necessary to give each hoop a slight tap with a hammer or trowel, to divide it into four perfect tiles. The hoops are usually thus treated, when taken from the kiln, as the tiles then occupy less space in transportation.

The gauge knife consists of a piece of wood a little longer than the width of the tiles, having a handle projecting at right angles from its centre, and shoulders or projections formed on its face, from which is stretched a fine metal wire, serving as a knife to divide the clay. These, with the small table revolving upon a vertical shaft stuck in the ground, on which the operator places the core whilst moulding, and a small bit of wood to smooth the clay, and a pan of water close at hand, to moisten it, are the only tools used.

Before commencing, a high mass of clay, large enough to make several hundred tiles, is first raised and formed by a pattern; the sides curved, the ends tapered, &c., so as to give the desired length and breadth to the tiles. Slices removed from this mass by means of the gauge knife, in the same plane with its top and bottom, it is obvious, will correspond with each other in shape and size. The process is as follows:—The operator holds the gauge knife by its handle, in his right hand, and presses its face close to the top of the mass of clay, at the same time drawing it towards him, from end to end; thus a slice is removed of the desired thickness. This slice being the exact shape and size for forming a conical hoop, the operator has only to bend it over the core, which he holds by its handle in his right hand, turning it with the revolving table at pleasure, while with his left he joins and smooths it with a bit of wood dipped from time to time in the pan of water. The core is now contracted, by drawing one edge inwards past the other, and lifted from the hoop of tiles. This completes the operation, and a boy removes the hoop to the drying ground. Thus four tiles are completed in one operation, almost as quick as thought, and with perfect accuracy of form.

At the same yard where I witnessed the process above described, were to be seen a great variety of ornamental brick, for the eaves of houses, to cover and give a finish to the ends of the tiles; also large flags of various sizes and forms, and of different colors, some for paving, and others for facing the fronts of houses. Some of the moulds were of metal, and very neatly made. The variety of ornamental brick, adapted to their curious style of architecture, is very great, and I can mention here, only one curious form of brick, which I believe is truly original with the Chinese. It is well adapted to a variety of useful purposes, and might perhaps be used in this country to advantage.

This brick is denominated the “dragon ribbed” brick, is about six inches long, two thick, and three wide, with a half circle groove formed longitudinally on its edge. They are used principally for partition walls, upper stories of houses and pagodas, light pavilions, &c., and in all cases, where lightness combined with strength, is desired. The manner of constructing a wall with this brick, is as follows:—Uprights with grooves longitudinally cut in their



edges, are placed, if for the first story, in the ground, at the distance of from six to ten feet apart, and if for a small building, only one at each angle of the wall. A number of slender bamboos are now cut to the proper length, so as to extend from post to post, and the ends fall in the grooves in the posts. The first layer of brick is laid with the grooved sides up, which will form a half circle groove the whole length of the wall; into this groove a bamboo is placed, the ends of which project into the grooves of the posts. The space between the bamboo and the brick in the groove, is now filled with cement, and another layer of brick with the grooved sides down, is laid over the bamboo, upon the top of the first layer, and cemented. The bamboo is now completely enclosed within the brick, and its ends projecting into the grooves in the posts, binds the whole together. Thus layer after layer of brick are laid with bamboos enclosed within the grooves, until the wall has attained the desired height; producing a very light, cheap and strong wall. A wall constructed in this manner, of only two inches thick, will resist, it is said, as much pressure within or without, as a solid brick wall of eight times the thickness; and if iron be substituted for bamboo, the strength would be increased vastly.

These walls are said to be a secure protection against burglars, Chinese thieves seldom if ever attempting to enter a house, through the door or window, but by removing with a sharp steel instrument, brick after brick out of the wall, without the slightest noise, until they have made a hole large enough to give them entrance; before entering, however, they cautiously introduce an artificial head of a man secured to the end of a pole, to ascertain if the inmates are asleep, and every thing is favorable to their purpose.

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#### PIN MANUFACTURE IN THE UNITED STATES.

During the war of 1812, in consequence of the suspension of importations, pins became very scarce. The prices asked for the few in the market, were many times the original cost—in some instances as high as a dollar a paper, by the pack. About this time an effort was made to introduce the manufacture in New York. Some pin makers came from England, bringing the necessary implements, and commenced the business at the old States Prison at Greenwich, (New York) employing the labor of the convicts. I think the establishment belonged to, or was managed by a man named Haynes. How much was done, I am not informed; but the low prices which prevailed very soon after the termination of the war, were fatal to the enterprise, and it was abandoned. In the year 1820, Richard Turman obtained the tools which had been used by Haynes. He made a contract for pauper labor, and undertook the manufacture in the alms-house at Bellevue. Mr. Turman carried on the business a year or two, when he died; having lost by the undertaking a considerable share of his property. Probably the trouble and perplexity of the business, together with the confinement consequent on attending to it, hastened his end. No further use was ever made of the tools. I recollect hearing Mr. Turman say at this time, that he had seen a *machine* for making pins, that it had made pins, but was too delicate, or intricate to be used with advantage. I suppose this machine was one which was invented and patented by Moses:



L. Morse, of Boston, during the war. I think Morse's machine had been worked to some small extent at that time; but it had passed into other hands, and was never used afterwards. His specification showed him to have been a man of good mechanical talents.

Lemuel William Wright, of Massachusetts, patented a machine for making "*solid-headed pins*," both in the United States, and in England, at an early period. I believe his specification and drawings are published in the London "*Repository of Arts*." He never attempted to put it to use in the United States, but in London he formed a company with a large capital, for the purpose of operating with it. The company built a large stone factory in Lambeth, and constructed some sixty machines, at great expense. It is understood that the machines failed in pointing the pins, and for that reason never could be put into successful operation. To obviate this difficulty, Wright invented a machine for heading the shanks, pointed and cut in the ordinary way by hand. The company did not succeed, and broke up with the loss of a great part of the investment. D. F. Taylor, who had been ruined by this failure, afterwards came in possession of the machinery, and, by connecting himself with a capitalist, under the firm of D. F. Taylor & Co., was enabled to start a manufactory of "*solid-headed pins*" at Stroud, in Gloucestershire. This was in 1832, or 1833. Some pins of their make even sold as early as 1833; which were the first "*solid-headed*" pins ever sold in any market. They obtained a patent for the "*solid-headed*" pin by act of Parliament. They used (principally or solely) the machine for heading only. Some account of Wright's machine is given in Mr. Babbage's work on the "*Economy of Manufactures*."

In 1832, a patent for a pin machine was obtained for the United States, by John J. Howe, and in 1833 and '34, patents for the same invention were obtained for England and France. This machine was designed to make pins similar to the English diamond pins, the heads being formed of a coil of small wire fastened upon the shank by pressure between dies. No arrangement was made to use this invention in Europe; but in December, 1835, the Howe Manufacturing Company, was formed in New York, for the purpose of putting it in operation. This company removed to Birmingham, (Derby,) Connecticut, where its manufacturing operations are now carried on. In the spring of 1838, a second patent for the United States, was obtained by John J. Howe, for a machine for making "*solid-headed*" pins in 1840; and this is the machine which is now in use, by the Howe Manufacturing Company.

Samuel Slocum, of Rhode Island, obtained a patent in England, for a machine to make "*solid-headed*" pins, in 1835. His invention was not put to use in England; but he established the manufacture of pins, by means of it, in Poughkeepsie, in 1838, under the firm of Slocum, Gillson & Co. His machine has not been patented in the United States, but has been, as it still is, run in secret. At this period, and till the Tariff of 1842 came into operation, pins (under the "*Compromise Act*," ) were free of duty; while brass wire of which they are made, was subject to a duty of 20 to 25 per cent. Under this discouragement, the business made but slow progress. But under the encouragement given by the Tariff of 1842, the two companies above named, went on increasing their production, and doing a profitable business, till 1846. In the meantime, it having been found that pins *could* be successfully manufactured by machinery—and exaggerated ideas both as to the extent of the business and the profits to be made in it, having obtained extensive prevalence,—many persons in different parts of the country, became engaged



in scheming on machinery for making pins, and much capital was expended, and finally sunk in these projects. These attempts were attended with various degrees of success; in a few instances a good article was produced, but in most cases, the article produced was more or less inferior in quality. The consequence was, that at this time, within but a few years after the manufacture had been commenced, and before it was fairly established (at least on its present basis,) the market was overstocked with goods, importations were nearly or quite arrested, and the business was ruined by domestic competition. This depression continued about two years, from 1846 to '48, and during this period, nearly every party engaged in the manufacture, or attempting to engage in it, excepting the two companies before named, suspended operations. Slocum, Gillson & Co., sold out their establishment to the "American Pin Company," of Waterbury, Connecticut, and the machinery was removed from Poughkeepsie to Waterbury, where it is now used by the last named Company.

The "American Pin Company," and the "Howe Manufacturing Company," now manufacture nearly all the pins consumed in the United States. There is a party at Poughkeepsie doing a limited business, and a small amount imported. Since the depression of 1846 to 1848, the business at the two companies named, has been reasonably profitable, having been rendered so rather by reducing the cost of production and the expense of selling, than by the small advance in price which has been realized. Both companies manufacture the wire for making their pins. During the last year, the two companies have used principally Lake Superior copper, for making their wire; their joint consumption of copper, amounting to about 250 tons, per annum. The present weekly production of pins by the two companies, may be stated at about 8 tons.

In connection with the improvement effected in the manufacture of pins, by the introduction of self-acting machinery, superseding a process which formerly required six or seven different manual operations, important improvements have been made in the method of sheeting the pins, or sticking them on paper. This, as previously performed, by inserting a few pins at a time by hand, was a tedious process, at which some five or six dozen papers were as many as a good hand could do in a day. By the improved machinery now in use, one hand will stick from 75 to 125 dozen a day, and do the work better than it was usually done in the old way. There are three patents now in force for improvements in the machines in use for this operation, viz: one granted to Samuel Slocum, one to De Grass Fowler, and one to John J. Howe. These patents are held jointly by the "Howe Manufacturing Company," and the "American Pin Company."

The present price of American solid-headed pins, is believed not to exceed two-thirds of the lowest price at which imported pins of equal weight were ever afforded before the manufacture was introduced, and for service, they are undoubtedly better than the article of which they have taken the place.

The American improvements in both the pin making and pin sticking machinery have been for several years in operation in England, and probably in other parts of Europe.



## SAN TORINO EARTH.

DEPARTMENT OF STATE, }  
Washington, Dec. 19, 1850. }

THOMAS EWBANK, Esq., *Commissioner of the Patent Office,*

SIR:—I enclose herewith an extract from a despatch from H. L. Maxwell, Esq., United States Consul at Trieste, respecting the "San Torino earth," which is said to make "the best under-water cement." It is respectfully submitted to your consideration, whether it would not be well to publish it, for general information, in your next report.

I am sir, respectfully, your obedient servant,

DAN. WEBSTER.

*Extract from a communication under date of Oct. 9, 1850, received at the Department of State, from H. L. MAXWELL, Consul of the United States at Trieste, Austria.*

There is a cement now coming into general use here, which, if not already known in the United States, is worth being tried. It is called "San Torino earth," and has been found to be the best *under-water* cement ever used in these parts. It is mostly used in the building of piers, moles, docks, &c.. The island, where it is found, and from whence it takes its name, is situated in the Grecian Archipelago, latitude  $36^{\circ} 23'$ , and longitude  $25^{\circ} 26'$ . The name given to it by the Turks, appears to be "Kameni," or, "the burnt Isle," and it is generally considered to be the remains of a volcano not yet entirely exhausted. The earth is exceedingly dry and appears to consist of silicate of iron and alumina, with a large proportion of a light, porous and fibrous substance which floats upon the water, and is supposed to be "pumice." It has been very extensively used in Syria and in Algiers, in the building of fortifications, &c., where it has been found to answer admirably, and also here at Trieste, and at Venice and Fiume, with equal success. These works have been chiefly under water in the sea, in which the cement sets very hard in a comparatively short time. Trials however have been made *above water*, and exposed to the action of the air, which are said also to have answered very well. For use, the following composition has been prescribed for works *under water*, viz: 7 parts San Torino earth—2 parts lime, and 7 to 9 parts stone rubbish; and for works above water, 6 parts San Torino—2 parts lime, and 6 to 7 parts stone rubbish. The rubbish stone should consist of pieces not too small, and as rough and irregular as possible, thus binding better with the cement. Where economy is greatly desired, a portion of sand may be used instead of wholly San Torino earth, in proportion of 4 parts San Torino, 2 or 3 parts sand, 3 parts lime, and 6 parts stone rubbish. This is said to be just as good as the first mentioned composition, though requiring longer time to harden. For use, the San Torino earth, sand and lime must be well mixed and made with the necessary quantities of water into a very consistent mortar, then heaped together and placed under roofing for two or three days. In the meantime the foundation should be made with loose stones thrown into the sea at the spot required, and the caisson or form sunk on this. Into this caisson are to be thrown alternate layers of the mortar and stones. To every 2 or 3 feet of mortar the same quantity of stone rubbish, and so on to the water's edge.

The price of this earth at the quarry is said to be from 8 to 10 carantani, per stago beneto, equal to about from 6 to 8 cents per cwt. If desired by Government, I will order a barrel for trial from here.



## VIII.

## PAPERS AND ABSTRACTS

RELATING TO

## EARLY AMERICAN INVENTIONS,

FROM THE ARCHIVES OF STATES.

The following interesting facts have been brought to light by the papers under this head in the last report. Some of them cannot fail to surprise inventors of the present day.

Steel Making : in 1728, in Connecticut.

Attempt at increasing speed of vessels in 1693, in New York. [The device not described.]

Tide Mills : "of such a nature as hath not yett been used." New York; by the same inventor as the above.

Heating the supply water of steam boilers, by passing the feed pipe through the furnace—by Fitch, in 1785.

Pipe Boilers : proposed by Henry Voight, of Philadelphia, in 1788, and adopted by Fitch.

Raising water by steam acting on two pistons—by Rumsey.

Tubular Boilers—by Rumsey.

Propelling Vessels by reaction of a stream of water—by Rumsey.

Improvement on Savery—by Rumsey.

Reacting Water Mill—by Rumsey.

Cylindric Saw Mill—by Rumsey. *et. seq.*

Card Making Machine—by Oliver Evans.

Improvements in Milling—by Oliver Evans.

Steam Carriage, or Locomotive—by Oliver Evans.

Carding and Spinning Machines—by Robert Lemmon, in 1786, (in Maryland.)

Printing Press—by Benjamin Dearborn, New Hampshire, 1787.

Balances, or Scales—by Benjamin Dearborn.

Hand Fire Engine—by Benjamin Dearborn.

Improvements on Chimneys.

Preparing Indian Corn, } patents granted in 1717.

Straw and Chip Hats, }

In the hope of eliciting further information, circulars were addressed to the State Departments of such States as had not been heard from: the following replies have been received. For the copious and characteristic extracts from the State papers of Connecticut, the office is indebted to the interest taken in



the subject by Hon. L. P. Waldo, of the House of Representatives. In these will be found information on Iron Works :—*Furnaces, Pig-iron, Slitting Mills, Kettles, &c., Iron Wire, Steel, Nails &c.*

Bell Founding,  
Polishing Crystals,  
Type Founding,  
Pin Making,  
Clock, (*winding up itself,*)  
Steam,  
Drill Plough,  
Pottery,  
Glass,  
Pitch,  
Salt,  
Paper,

Torpedo,  
Water Mills,  
Perpetual Motion,  
Cloth Making,  
Stocking Weaving,  
Flax and Woollen Manufacture,  
Silk Raising,  
Linseed Oil,  
Sugar Refining,  
Snuff,  
Cloth Dyeing, &c.



## NEW JERSEY.

State of NEW JERSEY,

DEPARTMENT OF STATE, }  
TRENTON, December 24, 1850. }Hon. THOMAS EWBANK, *Commissioner of the Patent Office*:

SIR:—Your Circular of the 6th inst., directed to His Excellency the Governor of this State, has been referred to this Department, and at his request, diligent search has been made among the records, but no evidence has been discovered that Patents have ever been granted either by the Provincial, Colonial, or State governments of New Jersey.

I have the honor to be sir,

Your obedient servant,

THOS. S. ALLISON,  
*Secretary of State.*



## MASSACHUSETTS.

COMMONWEALTH OF MASSACHUSETTS,  
Secretary's Office, Boston, *December 17th*, 1850. }

SIR:—Accompanying this, you will find a memorandum of such matters as are found in the records of this department concerning patents or privileges.

We find no documents of which we can send you copies, which we would gladly do, if in our power. Should we find anything more on the subject, we will transmit to you at once.

Very respectfully, your ob't serv't,

W. B. CALHOUN.

HON. THOS. EWBANK.

1652.—John Clark allowed by General Court, 10s., for three years, from every family who should use his invention for saving wood and warming houses at little cost. After trial for this period, he was granted the same privilege during his life.

1641.—General Court Records: Samuel Winslow had invented a method of manufacturing salt. None are to make this article for ten years, except in a manner different from his—provided he set up his works within a year.

1656.—John Winthrop, son of the Governor, granted the sole privilege of making salt for twenty years in Massachusetts, after his particular method.

1671.—Richard Wharton, a lawyer of Boston, and Company, have certain special privileges from the legislature for the manufacture of tar, pitch, turpentine, &c.

1672.—General Court reply to several hatters, who wished to have as a Company, peculiar privileges, that there should be granted to them when they should make as good hats, and sell them as cheap as those imported were.

1722.—The Legislature offer, by an act passed, a premium for duck and linen made in the province, of domestic material.

1640.—The General Court offered 3d. on every 1s. worth of linen and cotton cloth made in the colony; but this was repealed in the same year, because of the public burdens.

1701.—The Legislature to encourage the sowing and manufacture of hemp, raised in the Province, engage to pay to any Company who purchase this article at 4½d. a pound, ¼d. on each pound so purchased.



## DELAWARE.

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MILFORD, DELAWARE, December 12th, 1850.

SIR:—Yours of the seventh instant came to hand to-day, to which I hasten to reply, that I have directed a search to be made in the public archives of the state for the information desired.

I have the honor to be, your ob't serv't,

WILLIAM THARP.

HON. THOS. EWBANK,

*Commissioner of United States Patent Office.*

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SECRETARY'S OFFICE, DOVER, January 3rd, 1851.

SIR:—His Excellency, the Governor, directs me to say in reply to your circular of the 7th December, that there are no records or documents in the State Department of this State relating to the subject of patents, or which would furnish any information of the kind desired by you—nor can he obtain such information by inquiry. It is not known that any patents were granted under the Colonial Government of the State. The evidences of such grants, if any there were, would more likely be found at Harrisburg. No patents are known to have been granted by the State Government, prior to the confederation of the States.

I have the honor to be, with great respect,

Your ob't serv't,

D. M. BATES.

*Secretary of State.*

HON. THOS. EWBANK,

*Commissioner of Patents,  
Washington.*



## C O N N E C T I C U T.

EXTRACTS FROM COLONIAL AND STATE PAPERS, IN THE  
OFFICE OF THE SECRETARY OF STATE, HARTFORD.*Early Acts of the Colony to Encourage Discoveries and Inventions.*

At a session of the General Assembly, at Hartford, March 10th, 1663 [4.]

“The court for the encouragement of any person that will lay out himself for the discovery of any mines and minerals, &c., do order that whosoever shall make such discoveries, and purchase it for the country, he shall be honorably rewarded out of what he doth discover, as aforesaid. (Colony Records, II. 193.)

In the printed statutes of 1672, the laws state:—For the encouragement of such as will lay out themselves upon the discovery of mines or minerals, for the public good:—

It is ordered, by authority of this court, that whosoever shall expend their time or estate upon such discoveries, and purchase them for the country, he shall be honorably rewarded out of what he doth discover, for the same. (p. 52.)

It is ordered that there shall be no monopolies granted or allowed amongst us, but of such new inventions as shall be judged profitable to the country, and for such time as the general court shall judge meet. (p. 52.)

And to the above was subsequently added,—

*“An Act for Encouraging Adventurers in Discovering Commodities.”*

Be it enacted, &c. That if any person or persons shall set themselves on work to discover any commodities that may be of use for the country, for the bringing in a supply of goods from foreign parts, that is not as yet of use among us; he that discovers it, shall have due encouragement granted to him, and the adventurers therein. (Statutes of 1715, p. 5.)

## I R O N.

The following paper, designed to be presented to the Parliament of Great Britain, being preserved on file, would indicate that it originated in this colony.

“Reasons against a general prohibition of the iron manufacture in his Majesty’s plantations, intended by a clause in the bill now depending, entitled *A Bill for Encouraging the Importation of Naval Stores from America.*”

I. If the clause be taken in a strict sense, all iron work for building sh. houses, mills, and even what is necessary for instruments to till the ground will be forbid to be made there; whereby it will become impracticable in the plantations, because this sort of iron manufacture must be made spot, that it may be framed and fitted to the size of the work.

II. To forbid his Majesty’s subjects the making any sort of iron



when its for their own necessary use, and not for exportation, seems to bear hard on the common rights and liberties of mankind; especially when the ore is what their own soil yields, and what is found but in small quantities, comparatively, in the mother kingdom.

III. If such a prohibition be thought just, to prevent the plantations from interfering with the iron workers in this kingdom, all other tradesmen may expect, in their turns, to be forbid working at their respective callings; for by the same reason, the people may be forbid making cheese or cider, for fear of prejudicing the manufactures in *Cheshire* and *Herefordshire*.

IV. It is humbly conceived, there is no occasion for this clause. All labor is so excessively dear in the plantations, that no manufacture of the lesser iron wares can vend, or ever does there, but when it happens by accident that there is a great scarcity of the same commodity made in *Great Britain*.

V. The encouragement given by the bill for the importation of bar iron from the plantations, by taking off the duty, which is two pounds per ton, is not sufficient to bring it in; of which there needs no other proof, than that a ton of iron is worth sixty pounds in *New England*, their money, and but twenty pounds here, to say nothing of the chargeable freight thence; so that if the clause pass, the iron ore in the plantations will be of use neither there nor here.

VI. It seems a further hardship, that the subjects abroad should be permitted to forge their ore into bars, but not to run or cast it into pots and other implements, because the same fire, and even the same heat, will suffice for both.

It is therefore humbly prayed, that the clause prohibiting any kind of iron wares to be made in the plantations, though for their own use, and not for exportation, be left out of the bill. (Industry I. 98.)

### IRON WORKS IN LYME.

*To the Honorable General Assembly, &c.*

The memorial of Samuel Southworth, of Lyme, in the county of New London, humbly sheweth:—

That he hath lately, at great cost and charge, built an iron work, and hath made considerable quantity of iron, and hath also built a refinery to refine pig iron, which is to be had plentifully at Philadelphia, which iron when refined, is as good for any use as Sweeds or Spanish; which if the same could be carried on to good purpose, would be a great advantage to the country in general, and hinder the importation of great quantities of iron. And your memorialist, being much reduced by his great cost in building said works, is unable to carry it on to good purpose, and the same will unavoidably sink and come to nothing, unless your honors will, in your wonted goodness to relieve the distressed, relieve your memorialist, by loaning him some money out of the public treasury, to the quantity of £2000. Which your memorialist humbly prays that your honors would, (loan) and that upon good land security or bond to your honors' or committee's acceptance; and that he may pay in interest and principal in iron, at as much less than the market price, as your honors judge reasonable. But if that cannot, by your honors, be complied with, then that he may have it on good security as above, on moderate interest to be paid in some convenient time. And your memorialist, as in duty bound, &c.

SAM'L SOUTHWORTH.

ME, May 15th, 1741.

(Industry I. 132.)

legislative action on said petition.



General Assembly appointed a "committee to make a proper inquiry for obtaining an account of the quantity of iron made in this colony, as required in a letter from the Lords of the board of trade, dated June 9th, 1757, to the Governor and Company of this colony, and make report, &c., to this present Assembly." (Industry I. 174.)

### IRON WORKS AT DERBY.

*To the Honorable, &c.*

The memorial of Ebenezer Keny, Joseph Hull, Jr., and John Wooster, all of Derby, &c., and Thomas Pirkins, of Enfield, &c., humbly sheweth:—

That your honors' memorialists, being desirous of erecting and setting up iron works, on the falls of Nangatuck river, in said Derby, where there is a proper and convenient place therefor; and the Indians of said Derby, whereof John Howdee and Joseph Chuse are the head or chief men, [and] own about 40 acres of land, bounded west on said river, south on said falls, and running so far north as the head of said falls, which will impede the setting up said iron works, unless liberty can be obtained for purchasing the privilege of a highway by the river side, &c.

Whereupon your memorialists humbly pray, &c.

Dated at Hartford this  
12th day of May, 1760.

EBENEZER KENY.  
et. al.

Petition granted by Assembly. (Industry I. 180.)

### IRON WORKS AT CORNWALL.

To the Honorable General Assembly of the English Colony of Connecticut, in New England in America, now sitting, &c. Oct. 1761.

The memorial of John Patterson, Ephraim Patterson, and Thomas Russell, all of Cornwall, in the county of Litchfield, humbly sheweth:—

That your honors' memorialists are owners of a tract of land lying on the east side of Owasatunnuck river, and adjoining tract thereto, in said Cornwall, in which is a proper place for building a furnace for running iron ore into pigs fit for refinery, and are owners of land stocked with wood for coal, and have a good sufficiency of ore to supply said furnace; and being sensible of the great advantage it would be to the interest of people of this colony, and being advised that it will, in process of time, be somewhat profitable to the undertakers, are zealously inclined to set up such furnace, but have not personal interest enough at present, to carry it on to effect; therefore pray your honors to grant us the liberty of taking out of the public treasury of this colony, £1200, in bills of credit on this colony, and that we may have it for the term of four years, upon our giving land security double the value of said sum, or bonds with sufficient security, payable at the end of said time, with the lawful interest; said security to be according to the judgment of such committee as your honors shall appoint; said money to be taken out of the treasury, in case your memoria. go on and get such furnace at work within two years. And your, &c.

Dated in Cornwall, this  
10th day of October, 1761.

JOHN PATTERSON.  
EPH'M PATTERSON.  
THOS. RUSSELL.

(Industry I. 204.)

Assembly continued petition to May next.



*To the Honorable, &c.*

The memorial of William Tanner, Benoni Peck, Elijah Steel, Heman Alling, all of Cornwall, &c., humbly sheweth:—

That your memorialists have purchased the one-eighth part of the great ore bed in Salisbury, in the county of Litchfield; and that your memorialists have in Cornwall, a very convenient and suitable place, on the Housatonuck river, to set up a furnace for the making of iron; which place is abundantly furnished with wood for the said purpose; and it is about nine miles distant from said ore bed, whereof four miles is good water carriage. And your memorialists have made preparation for erecting a furnace in said place, for the making of iron, and therein expended about £100 lawful money; and your memorialists beg leave to inform your honors, that they have been disappointed of a large sum of money, of which they were assured and depended thereon, at their entrance upon this design; which disappointment they have been unable to retrieve, and thereby they are rendered wholly unable to prosecute said design, which your memorialists really believe would be very beneficial to this colony, by supplying the inhabitants thereof with iron made in the colony, and preventing the exportation of moneys therefor. And your memorialists could easily carry on and execute said design with £1000 cash, which they have been unable to procure, unless they join with persons out of this colony; although they are willing to give interest and land security worth double said principal sum and interest.

Wherefore your honors' memorialists humbly pray your honors to loan, out of the public treasury of this colony, to your memorialists, the sum of £1000 to enable them to set up a furnace for making iron, as aforesaid, on their securing principal and interest as aforesaid. And your honors' memorialists, as in duty bound, shall ever pray, &c.

Dated at New Haven, the  
11th day of March, A. D. 1762.  
(Industry I. 205.)

WILLIAM TANNER.  
BENONI PECK.  
ELIJAH STEEL.  
HEMAN ALLING.

No action by Assembly on petition.

### IRON WORKS IN LYME.

The papers relate to a controversy about the use of water wanted for a gristmill. Extracts follow:

“That it is of much greater consequence to the public, that their gristmill should be kept going, than that said iron works should: yet your memorialists apprehend, that if said water, preserved in such large ponds, was prudently used, said iron works might go, without hurting the gristmills, many more months in each year, than they have ever done in any one year since they were erected; for that they, for many years now last passed, have been kept going but very little in the winter season, when there is water, &c., and have been kept going in the summer, or dry season of the year, when there is not water, &c.

And they petition General Assembly to regulate the matter.

Petition is negatived.

(Industry I. 202.)

### SLITTING MILL IN SUFFIELD.

Whereas, Mr. Ebenezer Fitch has represented to this court, that divers gentlemen, in company with himself, are willing and desirous to set up a slit-



ting mill upon the river called Stony Brook, within the bounds of Suffield,\* in the county of Hampshire, or elsewhere in the county of Hartford, within this colony, to slit and draw out iron rods for nails and other artificers in iron, their work and use; and since the charge and adventure of the first undertakers of such an affair must be considerable, hath therefore prayed this court for a private act in favor of himself and company, to grant them the sole privilege of such a mill for some time, in recompense of their expenses and adventure; and the court, considering the great advantage such a mill will be to this government, as well as the neighboring, have therefore thought fit to encourage the same.

Now, therefore, for the encouragement of said Ebenezer Fitch, and such as shall join with him in the said undertaking:—Be it enacted, &c., that no other person or persons whatsoever, shall or may erect any slitting mill or slitting mills in any part or place within this, his Majesty's colony of Connecticut, upon any pretence whatsoever, at any time during the space of 15 years, from and after this present session of this general court, upon pain and penalty of £10 per month, for every month that any such slitting mill shall stand within this colony, within the time aforesaid, to be recovered, &c.

Provided, that the said Ebenezer Fitch and company shall, within three years, &c., erect and set up a good sufficient slitting mill, &c.

Passed General Assembly, May 1716.

(Industry I. 101.)

\*Then claimed by Massachusetts.

### ENFIELD IRON WORKS.

*To the Honorable, &c.—The Petition, &c.*

That Joseph Webb, of Wethersfield, in his life time, to wit, on the 19th day of September, A. D., 1759, bargained and agreed with Col. Timothy Dwight, of Northampton, &c., and Captain Samuel Dwight, of Enfield, to purchase of them one fourth part of their Iron Works, at said Enfield, together with one fourth part of the land in said Enfield, granted for building said iron works, and one fourth part of the dam, implements, &c., at the great importunity of said Timothy and Samuel, and upon their representation that the same might be paid for, and they would take their pay for the same in bar iron, manufactured in said works: whereupon the said Joseph was induced to agree and did agree to buy the fourth part of said works, &c., at the price of £100 money, to be paid in bar iron of that value at said works, &c.

(The remainder of the petition relates solely to the fulfilment of the terms of the contract. Mehetabel Dean was the widow of said Webb.)

Signed,

SILAS DEAN,  
MEHETABEL DEAN.

Wethersfield, January 28, A. D. 1767.

(Industry II. 129.)

### SALISBURY MINES AND IRON WORKS.

A Court of Election held at Hartford, May 14, 1674.

This Court grants John Bissell 100 acres of land, provided he take it up where it may not prejudice any former grant. (Towns and Lands VI. 82.)

At a General Assembly holden at Hartford, May 12, 1726.

This Assembly do appoint the surveyor of the county of Hartford, to survey and lay out the said 100 acres of land, in any of the ungranted lands of this colony, according to said grant. (Towns and Lands VI. 82.)



To the Honorable the General Assembly, sitting at Hartford, May 9, 1734.

The memorial of Jared Eliot, of Killingworth, Elisha Williams, of New Haven, Martin Kellogg, of Wethersfield, Robert Walker, Jun., of Stratford, John Ashley, of Westfield, Philip Levingston of Albany, and Ezekiel Ashley of Sheffield, humbly sheweth :

That this Honorable Assembly at their session on May 14th, 1674, granted 100 acres of land to John Bissell, late of Windsor, deceased ; and at your session on May 12, 1726, ordered the surveyor of the county of Hartford, to survey and lay out said 100 acres in any of the ungranted lands of this Colony. In pursuance whereof, Jonathan Burnham, surveyor of lands for the county of Hartford, laid out said lands, as followeth, that is to say :—To begin at a stake and heap of stones west of Ousatonock river, and westerly of a large pond known to the Indians by the name of Wonoikopozo pond, said pond lyeth easterly of the road leading from Weatauge to Sackett's farm, and from thence measured south  $13^{\circ} 30'$  west, 120 rods, to a stake and heap of stones ; then measured east  $13^{\circ} 30'$  south to a stake and heap of stones, 33 chains, 33 links and one-third of a link, to a large black oak tree marked, and with stones about it ; from thence measured north  $13^{\circ} 30'$  east, 30 chains, to a stake and heap of stones ; then measured west  $13^{\circ} 30'$  north, 33 chains 33 links and one third of a link, to the place where it begins ; and marked trees in the line between each monument :—Which said 100 acres of land laid out as aforesaid, is now by mean conveyances become the estate of your memorialists, and there being found in said lands, a bed of iron ore, we have advanced considerable sums to set up iron works for the improvement of it : Whereupon your memorialists humbly pray that this assembly, would allow us to take out a patent under the seal of the corporation, for the confirmation of our title to said land ; and your memorialists as in duty bound, &c. (Towns and Lands VI. 83.)

JARED ELIOT, *et. al.*

Upon the memorial &c., \* \* \* Wonokopoiko pond, which said 100 acres of land was surveyed and laid out by Jonathan Burnham, &c., unto John Pell and Ezekiel Ashley, as is set forth in the survey of said Jonathan Burnham, dated Oct. 27th A. D., 1731 :

It is Resolved, That the memorialists have a patent as prayed for, provided they shew to the acceptance of the Governor and Secretary, that the right to the remainder of the 100 acres of land, (which is not yet made out) is well vested in said Philip Levingston, by lawful conveyance, before the said patent be executed. May 1734. (Towns and Lands VI. 83.)

### ORE BED.

To the Honorable, &c., May 1784.

The memorial of Samuel Forbes, Henry Levingston and Nathan Hall, in behalf of themselves and the rest of the proprietors of the iron ore bed in Salisbury, &c., humbly sheweth :

That your memorialists, being owners of said ore bed, with the right only of digging and raising the same, have found, by long experience, that valuable body of minerals is constantly wasting, by the irregular method of raising the same, in that the canals or water courses (are stopped) which increase the quantity of ore, and care is not taken to keep them open, after the mines have exhausted a vein of the bed of ore, or from some other cause which your memorialists are convinced is occasioned by the irregular conduct of the



miners, who are not under the possible control or direction of the proprietors, as each one digs and raises for himself, and strangers are constantly trespassing with impunity, whereby great injustice is done, not only to your memorialists in general, but to individual proprietors, who cannot derive the avails of their proportions of ore raised from said bed, and the public are in danger of losing that valuable resource of the most useful and necessary manufactures of this State. And your memorialists would observe, that in their present situation, a recovery at law for any trespasses is impracticable, being tenants in common, all suits for trespass must be brought in the name of all the proprietors, three eighths of which proprietorship is divided amongst near 100 persons, and is continually changing, whereby suits abate before any trial or judgment can be had thereon; and for each proprietor to commence a suit for his share or moiety of the ore raised by any of his fellow commoners, is attended with more expense than the avails are worth. Neither can your memorialists adopt any efficacious method of raising the ore, to prevent the injuries aforesaid, and many other inconveniences and losses which unavoidably attend their present tenancy, which your memorialists are confident can be provided against, were they properly incorporated, with power to appoint an agent or committee to superintend the raising of the ore, and employing miners according to the directions of the major part of the proprietors, at an annual meeting, with power of suing and being sued, by their agent or committee, and also the power of making and carrying into execution necessary by-laws for the benefit of the proprietors.

Whereupon your memorialists pray your Honors to take their case into your wise consideration, and grant them a Charter of Incorporation, thereby enabling the proprietors of the iron ore bed in said Salisbury, to regulate the raising said ore, and appointing an agent or committee to superintend and regulate the same according to the directions of the proprietors, at their annual meeting, and a power of making necessary by-laws, and of suing and being sued, by their agent or committee. And your memorialists, &c.

SAMUEL FORBES,  
HENRY LIVINGSTON,  
NATHAN HALE.

Dated at Salisbury, the 26th day of April 1784. (Industry II. 184.)  
Act of Incorporation granted, (186.)

In a petition for town privilege, May 13, 1736, petitioners of Salisbury say:  
“We \* \* \* are building iron works, and have plenty of ore, &c.  
(Towns and Lands VII. 232.)

To the Honorable General Assembly, &c.

The memorial of Charles Caldwell, of Hartford, &c., and George Caldwell, of Salisbury, &c., humbly sheweth:

That your Honors' memorialists have purchased the principal part of the furnace at Salisbury, aforesaid, for the making pig iron, potash kettles, and common pots and kettles of iron, &c, which cost them a very large sum of money; and that for sundry years last past, they have vigorously carried on the business of making pig iron, &c., to the very great advantage of the colony, as well as to their own private benefit, and have supplied many forges in this colony with pig iron to be made into bars, and have, over and above that, exported and sold abroad pig iron, and pots and kettles, annually to a large amount. And your memorialists have also erected a good new forge within 15 miles of the town of Hartford, [at Simsbury] for the making



of bar iron out of pigs. And your memorialists would further observe to your Honors, that while they are pursuing that business with satisfaction to their own benefit, they also find by constant experience that it is of vast public advantage to the colony, as every bar of iron produced thereby is a saving of so much cash to the government, and keep that cash among ourselves which used to be sent abroad, for the purchase of iron, which is an article that the colony cannot subsist without, and which costs them annually about £20,000, a very large sum to be sent yearly out of the colony, which your memorialists suppose they have already put a great stop to, by means of said furnace, and suppose themselves fully able to supply the colony entirely with pig iron, which is easily wrought into bars fit for use by their own as well as the various other forges in this colony. 'Tis not unusual that matters of such public benefit and utility should meet with obstruction from those who find their advantage in keeping the colony dependent on foreign markets for their supply of such a valuable article. We, your memorialists, have met with and experienced very great hindrances, troubles and difficulties from persons of that character, many times to very great loss, though we have constantly kept our works in order and under improvement, at a vast expense, being obliged constantly to retain in our service for carrying on the business, about 50 hands, who are all employed in the different branches of the business, and we now have as large a stock on hand to be wrought up into iron, as we ever had since we owned those works, but find ourselves not able to make those works so extensively useful to the public as well as beneficial to ourselves as we might do, could we command somewhat more of the ready cash in this season of the great scarcity of money. And knowing your Honors' strict attention to whatever is for the public benefit of the colony; we your Honors' memorialists do thereupon humbly pray this Honorable Assembly to take the matters aforesaid into your serious consideration, and that your honors would be pleased to order and enact that your memorialists may and shall have the sum of £1,200 on loan, out of the public treasury of the colony, on interest, to be repaid again into the treasury, at the end of 2 years, on your memorialists procuring and giving good and sufficient security, that shall be approved of for the repayment thereof, in order that we may the more advantageously carry on said works: and we, as in duty bound, shall ever pray.

GEORGE CALDWELL,  
CHARLES CALDWELL.

Dated in Hartford, this 7th day of Oct. A. D. 1767. (Industry II. 132.)

Loan is so made, and committee is appointed to execute the bonds. (131.)

To the Honorable General Assembly, &c.

And now your memorialists beg leave to represent to this Honorable Assembly, that they conceive themselves obliged, out of gratitude to your honors, and loyalty and friendship to the true interests and weal of this colony, to inform, that, notwithstanding the moneys graciously granted to your memorialists aforesaid, and received by them under the disadvantages it was, they find they cannot hold and carry on said furnace to advantage to the public or themselves;—for that some years past your memorialists were necessitated to hire £1,500 of lawful money in New York government, for which one Mr. John Rutsen was bondsman, to whom your memorialists were obliged to mortgage said furnace and bed of ore, &c. And that said Rutsen is sued and has judgment against him for said money by means of, and at the instigation of those who are seeking to engross said works and ore into their own hands,



out of this colony, whereby said Rutzen must and will (notwithstanding the utmost endeavors of your memorialists and the helps already afforded them) recover said furnace, and your memorialists' whole interest in said ore from your memorialists, for the sum aforesaid with the addition of about two years interest, not half the sum it cost your memorialists, whereby the whole interest of said ore bed and furnace will go from your memorialists, and fall into the hands of people living in the province of New York—whereby this colony will be deprived of the only means of supplying and carrying on the iron manufactory within themselves, which is of the greatest necessity and importance in almost every business of life. [Petition is here mutilated.] General Assembly to appoint a [committee to look into the] affair, or contrive some other way whereby said [ ] may be cleared from said ore and furnace by the colony, and to take a conveyance of said ore bed and furnace to the Governor and Company of this colony, in security, which your memorialists are willing to give, asking only that they may have the use and improvement of said furnace and ore bed for the space of four years; and till then allowed them to redeem said furnace and ore bed from said Governor and Company: or some other way devise means effectually to prevent the loss of so great, necessary and lasting advantage of furnace and ore bed to the colony, which your memorialists imagine can be done without advancing any money, by turns, orders, &c. And your memorialists &c.

CHARLES CALDWELL,  
GEORGE CALDWELL.

Dated at Hartford, May 16th, A. D., 1768.

(Industry II. 134.)

Referred to a committee.

The following is but a synopsis of papers:

Richard Smith of Boston, in the spring of 1768, was induced to supply Nathaniel Porter of Lebanon, with goods to the value of £862 for stores in Simsbury and Salisbury, to be vended to workmen in the iron works, and in the purchase of stock for the same, for which he was to receive pay in pig and bar iron of Charles & George Caldwell. In the fall, said Smith came into Connecticut, to see if it would be prudent for him to furnish said Porter more goods on the same account: When he was induced by the false representations of said Caldwells, to become a partner in said iron works in Simsbury and Salisbury, (at which time their affairs were in a most perplexed situation, and the furnace and premises were mortgaged to John Rutsey of Albany,) for half of which property said Smith agreed to give said Caldwell, £1,000 cash to clear Rutsey's mortgage, and £100 to be furnished in goods. But on a subsequent visit to Connecticut, Smith was surprised, that the fee of said property was vested in the Sheriff, Ezekiel Williams, by a deed of Caldwell's of anterior date to secure a debt in his hands: And to clear the same and claims of sundry other creditors, Smith was obliged to advance £1,200 L. M. additional. Finding himself thus deceived and traduced, he offered Caldwells a release, on giving him security for what he had advanced; as they were unable do this, he contracted to purchase all their interest in the iron works, for which he was to allow them £4,213 15s. He then, December 20th, entered into partnership with George Caldwell, in trade and the manufacture of iron; said George to take the oversight and management, and be at one-third of the expense, and share one-third of the profits. But at the earnest request of said George, on February 19th, 1769, Smith contracted to restore the whole works to him on his entering into bond to pay said Smith,



£8,663 9s. 5d. in three yearly instalments; which said Caldwell, utterly neglected to fulfil. Smith accordingly, in January, 1770, proceeded to oust said Caldwell, and took possession. (The forge at Simsbury, had been carried away by a flood.) As said Caldwells continue to harass him in every possible manner, Smith prays the General Assembly, April 21, 1770, to grant him a committee to settle their claims in equity, that he may be quieted in possession. (Miscellaneous III, 234.)

George Caldwell gives another version of the transactions, viz: That in view of the profitable investment, Smith offered to become a partner, with the ulterior design of getting the works out of their hands. That he promised on said Charles Caldwell's retiring from the concern, to set him up in trade to gain a livelihood; and that George Caldwell, was forced to enter into a bond, to release the property to Smith. And on July 3d, 1769, Smith's agent with others, forcibly made an attack on said George, in Salisbury, took away his books and papers, put a stop to the works; and on the entrance of said George with John McAlpin, on the premises, January 4, 1770, Smith entered a complaint against them for disturbing the peace; and on warrant, said Caldwell was thrown into prison, and on trial, he was found guilty and fined; and February 7, 1770, he was ordered by the court, to surrender the premises to Smith. Caldwell avers that said judgment was erroneous, and prays the General Assembly to set the same aside, and to restore him the property, and allow him £2,000 damages, April 28, 1770. (Miscellaneous III, 236 to 242.)

Caldwell's petition is rejected, and that of Smith's is referred to a committee, May, 1770; who, in October, 1770, report that no settlement can be made with Smith, but by assigning to him the debts. And the Assembly order said committee to proceed and finish a settlement with him. (Miscellaneous III, 235.)

Richard Smith carried on the iron works, under the agency of Col. Joshua Porter; but on the breaking out of the Revolutionary war, Smith not proving to be a friend to his country, his property was seized upon, and improved by the government of Connecticut. (See below.)

At a meeting of the Governor and Council of Safety, Tuesday, 9th January, 1776.

On representation to this board, that the iron furnace at Salisbury, belonging to Mr. Richard Smith, now in Boston, is in good repair, and capable of being improved to great advantage for the public by manufacturing iron, casting cannon, cannon balls, &c. On consideration thereof, it is voted and resolved, That Col. Jedediah Elderkin, be and he is hereby appointed a committee to repair forthwith to said furnace, and to the iron works of said Smith, at Sufferage, [Canton,] or higher up, and find the true state and circumstances of said furnace, and how they may be improved for the benefit of the colony, in either of the ways aforesaid, consult and advise in the best manner he can, as to the propriety of immediately improving and setting said works agoing for any or either of the purposes aforesaid; and make the best estimate he shall be able; and with his best discretion, if he shall find it expedient, give proper orders for executing any or either of said designs; and make report of his doings and opinion in the premises. (Council of Safety I, 59.)

At a meeting, &c., January 29th, 1776.

Col. Elderkin, gave in his account and report of the circumstances, &c. of the furnace, &c. at Salisbury, and the works thereabouts, Colebrook, &c.



Among other things, that a lot of about 200 acres of land lies near the furnace with about 150 acres of wood upon it, and may be bought in order for coal, and very difficult to get it in any other way. (Council of Safety I, 65.)

Governor and Council appoint a committee to purchase, &c. (65.)

At a meeting, &c., February 2, 1776.

Col. Elderkin is hereby appointed a committee to repair forthwith to Salisbury, and give proper orders and directions for procuring every necessary material for setting forward and promoting said business, and getting everything into the best readiness to carry on the same. (Council of Safety I, 74.)

Third February, 1776, &c., voted and ordered, that the committee of the payable draw on the treasurer in favor of Col. Elderkin, for the sum of £100, to enable him to do the necessary to forward the works to be done at the furnace in Salisbury, whither he is going by order to prepare said furnace for the casting of cannon, &c. 'Tis done! and the Governor lent him the money, and his order is endorsed. (Council of Safety I, 76.)

16th February, 1776, &c. Voted, that Lemuel Bryant of Middleborough, as a cannon founder at Salisbury, and David Cawer, Zebulon White and David Oldman, in those parts as moulders, and that said Bryant, procure four moulders for shot, and he, to come by 15th March, and the rest by 1st April. (Council of Safety I, 86.)

18th March, 1776, &c. Lemuel Bryant and Zebulon White were present, who had been sent for, near Middleborough, &c. as cannon founder, moulder, &c. The first demands two dollars, and the other one and one-third dollars per day, and to be supported. And having great necessity of them, and they affirming that they have had and are offered the same near home; it is, therefore, and on that ground, agreed to allow them that pay and support; but it is agreed and understood, that if said Bryant does not succeed, he is to have no other allowance than his support. And they are desired and sent forward to Salisbury, for the purpose of pursuing the business of making cannon, &c.

It is voted, that Col. Joshua Porter be and he is hereby appointed chief provider and overseer of the works at the furnace in Salisbury, and to do whatever shall be needful and proper to promote the public service at that place, observing such orders as shall be given to him from time to time, by His Honor the Governor, and this Council or the General Assembly of this colony, and keep proper accounts to be rendered when required. And this sent in a letter to said Porter, by said workmen. (Council of Safety I, 96.)

*To the Honorable General Assembly, &c.*

The memorial of Joshua Porter of Salisbury, &c., humbly sheweth, That in March last, he was appointed overseer and manager of the furnace at Salisbury, for the purpose of casting cannon, shot, &c., by his Honor the Governor and his Council; that he immediately entered upon the business, went to procuring coal and ore, and putting in repair the furnace, and for that end, drew out of the colony treasury about £550 L. M., which money is all expended; and your memorialist wants about £800 more, to enable him to carry on said business with vigor and to the best advantage, which he will receive to be accountable for. Whereupon, &c.

JOSHUA PORTER.

May 14th, A. D. 1776. (Revolutionary war VII, 374.)

Allowed £800 on giving his receipt.

Committee is appointed to take into consideration the matter relative to the foundry at Salisbury, and to consider what is best to be done relative to the continuing and carrying on the same; and also to take into consideration



Mr. Paine's letter respecting the same, and report make, Oct. 1776. (Revolutionary war VII, 376.)

We, your honors' committee, &c.

Having considered the great utility and public benefit, which has already accrued by the foundry of cannon at said Salisbury furnace, in the summer past, and the great advantage which may hereafter arise by pursuing the same, notwithstanding we are apprehensive, that the cost may increase in procuring coal; yet, we are of opinion that every effort and exertion ought to be used to continue the present blast as far into winter as is possible, considering the season, and that every preparation ought to be made this winter, of provisions and all proper materials, for carrying on the foundry of cannon for the next season under the general direction of the Governor and his committee of safety, as has heretofore been. And as to the subject of Mr. Paine's letter referred to, we are of opinion, that it will not be practicable to add another furnace to the present, for the casting of large cannon; that the water would not be sufficient, and on many other accounts very inconvenient.

Signed per order,

ELIPH'T DYER.

(Revolutionary war VII. 377.)

Whereas, the public safety makes it necessary still to continue the cannon foundry at Salisbury in blast, for the purpose of making a sufficient quantity of cannon, &c. for the public defence, &c.

Therefore resolved, &c. That Joshua Porter, Esq., who has the charge of the foundry, be empowered, &c. (378.)

Committee is appointed to consider what other and further measures it may be expedient to take, to continue the furnace at Salisbury in blast, and the foundry of field pieces and other cannon, so much needed for the use and defence of this and the other American states in the present war, and make report as soon as may be, December, 1776. (Revolutionary war VII. 379.)

The state continued to sustain the furnace, appoint managers, &c. for some years. (Revolutionary war VII, 380, &c.)

May, 1777. The overseers petitioned the Assembly, that the workmen might be exempted from liability to be drafted into the public service. (Revolutionary war VII. 387.)

The classes of men which must necessarily be exempted from military calls, which may impede the cannon foundry, are—

The managers and clerk, . . . . .	3
Draughtsman of patterns and turners, . . . . .	3
Founder, firemen and moulders, . . . . .	10
Other workmen at the furnace, viz:	
Borers of cannon, . . . . .	2
Dressers of cannon, . . . . .	2
Clay Spanker, . . . . .	1
Guttermen, . . . . .	1
Filers, . . . . .	2
Banksman, . . . . .	1
Ore burner, . . . . .	1
Ore pounder, . . . . .	1
Ore wheeler, . . . . .	1
Carpenter, . . . . .	1
Colliers and ore diggers, . . . . .	30

(Revolutionary War, VII. 389.)



Assembly exempt 50 men necessarily employed, (388.)

The following are mere abstracts:

April, 1779. Governor and Council of Safety are authorized to lease the furnace for one year. (Revolutionary war, XIV. 281.)

William Whiting having leased the same, petitions the General Assembly to exempt workmen from draft, (284,) and they exempt 40 men, (285.)

Committee to take into account the circumstances of the furnace, April, 1780. (Revolutionary war, XVIII. 105.)

Report.—Governor and Council of Safety, leased the furnace and lands of Richard Smith to Wm. Whiting, to pay two tons of pig iron per month while in blast, &c., and Whiting proposes conditions for continuing. The wants of the state require that the furnace be kept in operation. (104.)

Joshua Porter says, he was appointed agent, March, 1776, and served 11 months, cast 300 tons of iron, and saved the state £8,306. His accounts were put into the hands of Wm. Whiting, his clerk; and he is surprised to learn that a committee have found him in arrears. He has in his hands £333 state money, but has received no pay for his services, &c.

On report of committee, he is allowed said £333 as compensation, and commended for his faithful services, May, 1780. (Revolutionary war, XX. 294 to 297.)

Richard Smith, late of Boston, now of Hamburgh, Germany, owner of the furnace and of large tracts of land, committed them to the care of Colonel Joshua Porter, Feb. 28, 1775, to lease and improve for said Smith's benefit. Since Col. Porter improved the premises for one year for the state, he says, they have been improved and leased to little advantage. The works are impaired and the utensils lost. He thinks, after the present lease of Mr. Whiting expires, it will be better for the state to relinquish all control,—as was done with Smith's refinery at Colebrook,—and leave the whole to private improvement. Oct. 16, 1780. (Rev. war, XX. 298.)

Col. Porter and Mr. Whiting both petition for a lease of the furnace, &c. Nov. and Dec. 1780. (Rev. war, XX. 302 and 299.)

General Assembly negative both petitions, and order governor and council to lease to the highest bidder, for one year, the furnace and lands at Salisbury, and the refinery at Colebrook, and take measures to have the iron at Salisbury refined. Nov. 1780. (Rev. war, XX. 303, 306.)

Sheriff Lord reports, that he attempted to lease the premises, for which £321,000 state money was bid; but becoming embarrassed, he stopped the vendue, and asks for instructions. Feb. 27, 1781. (Rev. war, XX. 309.)

Referred to a committee, who report that Smith joined the enemy, and his estate should be confiscated. March 3, 1781. (309.)

Ordered, that all persons holding property of said Smith, appear before the next assembly, to give reasons why his estate should not be confiscated.

Col. Porter and Jared Lane, each representing that they are attorneys, agents and factors of Richard Smith, petition general assembly, that after the expiration of the present lease, each of them may have liberty to improve the works for the owner.

Referred to a committee, who report that Smith went off from Boston with the British troops in 1775, and is a prescribed person in Massachusetts; and recommend that the furnace, &c., be improved by the state, until Smith's political character can be further investigated; and that taxes paid by said Lane, as agent, be refunded. Feb. 1781. (Rev. war, XX. 307.) Approved (308.)



Richard Smith states, that he left the country in 1775, on his private business, and was unable then to return. He petitions the assembly for liberty to return and possess his estate; the use of which he will lay no claim to, and will loan the state £1000 from the avails of goods he wishes to introduce. Jan. 1783. (Rev. war, XXIV. 101 to 103.)

He is so admitted a member of the state, on taking the prescribed oaths, &c. (104.)

### COLEBROOK IRON WORKS.

Committee to call Mr. Ogden to account, Nov. 1780. (Rev. war, XX. 303.)  
*To the Honorable, &c.*

The memorial of Jacob Ogden, of Colebrook, in the county of Litchfield, humbly sheweth:—

That in the night of 30th day of August last, the iron works and forge in the occupation of your memorialist, at said Colebrook, by some means, unknown to your memorialist, took fire and burnt to ashes, with the bellows and all the utensils thereto belonging: that your memorialist had laid out of his own money, in repairs from time to time, to the amount of about £200 L. M. which is now all lost: and the business of manufacturing iron and steel at said works, is at an end for the present. And your memorialist is willing and desirous of erecting a new forge in the same place where the old one stood, and of carrying on said business, provided he can be properly encouraged; and has already proceeded so far in said business, as to have set up a new frame; but from the difficulty of the times, and the lowness of his finances, he finds himself perplexed in getting forward with the dispatch he could wish, and that the public exigencies seem to require. He flatters himself that the utility of the business to the public, the acceptable manner in which he has performed it heretofore, and his determination to render it as useful as possible in future, will entitle him to the favor and patronage of your honors. [He then prays for a lottery to raise £300, or \$1000, and adds] and he be enabled thereby to go on with dispatch in completing said works, and have them a going in about five or six weeks, and be able to work up his stock on hand, of which he has a large quantity provided, in the course of the year, which will furnish a large supply of iron and steel, for the use of the citizens of this state, and tend to render those articles plenty and cheap. Or that, &c., in some other way, &c.

JACOB OGDEN.

Dated in Hartford, Oct. 19, A. D. 1781.

(Industry II. 175.)      Negatived.

### IRON WIRE.

*To the Honorable, &c.*

The memorial of Nathaniel Niles, of Norwich, in New London county, humbly sheweth:—

That by reason of the present unhappy controversy between Great Britain and British America, and the consequent interruption of trade, it is become of very interesting importance to these colonies, that the article of iron wire on which the woollen and cotton manufactory so greatly depends, should be manufactured in these colonies, which hitherto hath not been done; and that it is of importance this should be gone into with the greatest expedition, since the makers of wool cards, quite from Philadelphia to Nova Scotia, are at pre-



sent wholly out of proper employ. That your memorialist, desirous to serve his country in so important an article, has been at considerable expense of time, pains and cash, in acquiring the practical knowledge of this business; for which purpose he has attended, as far as he could gain advantage, either by men or books, to the European method; which he finds to be very tedious, it being necessary to carry each bar of iron through about 200 holes in a steel plate, before it is reduced to the size of card wire, and it being difficult and considerably expensive, and at the same time absolutely necessary to take the scale from the wire that is raised by heating, which operation must necessarily be frequent, in order to preserve the ductility of the metal. That in order to this article being afforded at the rate at which it has usually been sold by the importer, the apparatus must be very complicate, various and expensive, your memorialist apprehending the whole will amount to not less than £300. That your memorialist, considering the burdens that lie on the public at present, would undertake the business wholly on his own risque, notwithstanding the dangers into which his interest would, by this means, be thrown; had he a sufficiency first to make suitable preparations, and then to carry on this branch of manufacture, without involving himself in inextricable embarrassments. That not being able to do this, your memorialist, confiding in the zeal of this honorable assembly to promote American manufactures, humbly begs the grant of a lottery to raise £300, for the purpose aforesaid, not desiring, however, that the moneys so raised should be committed to him, to be applied by him at pleasure, any farther than such managers of said lottery, or such other persons as this honorable assembly shall see fit to appoint for that purpose, shall find evidence that the several sums they imburse have, bona fide, been applied to the single purpose of preparing to manufacture iron wire. The remainder of the proceeds of said lottery, if any there be, to be applied as this honorable assembly shall please to direct. That your memorialist apprehends he can, on such a grant being made, afford the several sizes of iron wire at the several rates at which they have most usually been vended in this and the neighboring colonies, by the importer. That if your memorialist finds, on experience, that he cannot afford it at such a rate, he will be holden to such prices as any committee appointed from honorable assembly shall judge reasonable, after an examination of the expense of making.

That if this honorable assembly shall not see fit, in their wisdom, to grant such a lottery, your memorialist begs such assistance as shall enable him to prosecute this business, either by a loan of money from the public treasury, or such other way as your honors, &c.

Hartford, May 17, 1775.

NATHAN'L NILES.  
(Industry II. 151.)

On the memorial, &c.  
Resolved by this assembly, that be and they are hereby appointed a committee to examine into the matters contained in said memorial, and the necessary expense of erecting the proper works for the manufacturing of iron wire, and what encouragement may be properly given the memorialist therefor. And if said committee, upon due examination, shall judge it reasonable and expedient, they are hereby empowered to draw their order on the colony treasurer for any sum not exceeding £300, to be paid by said treasurer, who is hereby directed to pay the same to the memorialist, upon his giving good security, to the acceptance of said committee, that such sum shall be improved solely for the setting up and carrying on said manufactory, and that



the principal sum so received, shall be repaid at the expiration of four years after received, without any interest thereon.

May 1775. (Industry II. 152.)

Niles continued the manufacture of wire through the war. (See snuff.)

*To the Honorable, &c.*

The memorial of Samuel Bull, of Middletown, &c., humbly sheweth :—

That your honors' memorialist, being about to set up the manufacture of wire, hath turned his attention to the building and works erected at Middletown, &c., for the refinery of lead; which buildings and works, your memorialist is informed, by men skilled in the trade of drawing wire, would answer his purpose exceeding well, &c. The zeal which your honors have at all times, and especially since the commencement of the present war, shown to encourage and promote home manufactures, has induced your memorialist confidently to hope for your honors' patronage, in a branch of business which is likely to be very useful to the public. His only request is, that your honors would permit him to take said buildings and works, and use them for the purpose aforesaid, for the space of seven years, &c.

Dated at Middletown 28 May, 1782.

SAMUEL BULL.

(Industry II. 176.)

Referred to a committee; on whose report a committee is appointed, to view the buildings and works at Middletown, and agree with said Bull for their use, &c. (177, 178.)

## NAILS.

### *An Act for the Encouragement of Manufacturing Nails.*

Be it enacted, &c. That there shall be paid out of the treasury of this state, a premium on nails manufactured in this state, of the following dimensions, viz: on all nails that shall weigh not more than 13lbs., nor less than 10lbs. per 1000, three-eighths of a penny; on all nails that shall weigh not more than 10lbs., nor less than 4lbs. per 1000, two farthings on the pound; and on all nails of less dimensions, a premium of one penny per pound;—from and after the first day of October next, for the term of 3 years. May 1786. (Industry II. 215.) Negatived in upper house.

## STEEL.

*To the Honorable, &c.*—May 1728.

The humble memorial and request of Samuel Higley, of Simsbury, and Joseph Dewey, of Hebron, &c., sheweth :—

That the said Higley hath, with great pains and cost, found out and obtained a curious art, by which to convert, change and transmute common iron into good steel, sufficient for any use; and was the very first that ever performed such an operation in America, having the most perfect knowledge thereof, confirmed by many experiments; and hath communicated the same to the above named Joseph Dewey, and jointly with him, have made further experiment and improvement, with considerable cost and labor; and we are thereby well assured, that the art, by good improvement, may redound to the public benefit and advantage of this colony, in that we have good reason to hope that we shall produce as good, or better steel than what comes from overseas, and at considerable cheaper rate. And that the affair be set forward



with the greater expedition and certainty, we propose to take into our company and assistance, four men, more able and of greater ability than ourselves to promote and set forward, to the honor of the British nation and prosperity of this colony.

Therefore we, the said Higley and Dewey, humbly pray this honorable assembly would be pleased to grant to us, your honors' humble petitioners, our heirs and assigns, free liberty to set forward said art, and practice the business or trade of steel making, for the space of twenty years next coming, and prohibit all others that may pretend thereto, within this colony, without our consent: provided we, your petitioners, or any under us, improve the said art to any good and reasonable perfection, within two years from the day of the date hereof, and so long as we shall well prosecute the same as above, and no longer, and your memorialists, &c.

SAMUEL HIGLEY.

JOSEPH DEWEY.

(Industry I. 118.)

This may certify to all concerned, that Samuel Higley, of this town of Simsbury, came to the shop of us, the subscribers, being blacksmiths, sometime in June, 1725, and desired us to let him have a pound or two of iron, made at the new works near Turkey Hills, which we, according to his desire, let him have, shaping several pieces according to his order. He desired that we would take notice of them, that we might know them again; for, said he, I am going to make steel of this iron, and shall in a few days, bring them to you to try for steel. Accordingly he brought the same pieces which we let him have, and we proved them, and found them good steel, which was the first steel that ever was made in this country, that we ever saw or heard of. Since which he hath made farther experiments, taking from us iron, and returning it in good steel. As witness our hands, this 7th day of May, 1728.

TIMOTHY PHELPS.

JOHN DRAKE.

(Industry I. 120.)

Whereas, &c.

We being willing to give all due encouragement to works of this nature, are pleased to condescend to their request; and do therefore by these presents grant to them, the said Samuel Higley and Joseph Dewey, our license and liberty for the sole practising the said art of steel making, to be and remain to said Higley and Dewey, &c., for and during the space of 10 years, next ensuing this date, strictly forbidding all persons practising the same within this colony, &c., without the consent and approbation of the said Samuel Higley, &c., under their hands and seals, as they will answer the country at their peril; the said Higley having power to take into their company, in and of himself, &c., three partners, and the said Dewey, in like manner, one partner.

Provided, always, that the said Higley and Dewey, &c., improve the art as above, to any good and reasonable perfection, within two years, &c., and so long as they shall prosecute the same, and no longer. May 1728.

(Industry I. 119.)

To the Honorable, &c. Oct. 1740.

The memorial of Thomas Fitch, George Wyllys and Robert Walker, Jr., all of said colony, most humbly sheweth:—

That your memorialists have been at the pains and expense of procuring the art and skill of making and converting iron into steel, and do judge it would be of very considerable advantage to this colony if the same be suitably encouraged and well performed in the same; and that your honors' me-



memorialists are desirous to undertake the business aforesaid, if they may be suitably encouraged therein.

Whereupon, your memorialists most humbly move and pray this honorable assembly to grant us the sole liberty and privilege of performing the said manufactory of making and converting iron into steel, for the space of twenty years; and that your honors may more fully see the thing we desire, and the easier make the said grant, we have drawn a bill for an act for the purpose aforesaid, which we herewith present, and pray your honors to pass the same into your act, or something equivalent thereto. And your memorialists, &c.

New Haven, Oct. 1740:

THOMAS FITCH.

GEORGE WYLLYS.

ROBERT WALKER, JR.

(Industry I. 137.)

Granted for fifteen years, on condition that the said Fitch, Wyllys and Walker, &c., shall neglect to begin and perform said work, within two years after this date, and shall at any time after said two years, neglect to make half a ton of such steel in any one of the years within said term, then this grant and act, in every part thereof, shall be void. (138.)

*To the Honorable &c.,*

October 1743.

Messrs. Fitch, Wyllys & Walker, in their petition add,—Whereupon, we with our assigns, one of whom was the Rev. Mr. Timothy Woodbridge of Simsbury, now deceased, expended a considerable sum of money in making a furnace, and providing other materials, in consequence of said grant, and in pursuance of said design, and had agreed to have made an experiment before the expiration of the said two years; but while we were preparing and before we had got ready, Mr. Woodbridge, on whom our dependence was to prepare and make the experiment, was removed by death, and thereby we prevented doing what we intended, within the limitation aforesaid: And as we are now got in readiness to make the experiment in a short time, and are willing to have the advantage of our risque and expense, and having been disappointed as aforesaid,—we pray your honors to renew the said grant to us and our assigns for the remaining 12 years, on the conditions before made upon, only we are willing that instead of two should be one year to effect the work in, &c.

New Haven, Oct. 18, 1743.

Signed as above.

Assembly so renew the grant. (140.)

(Industry I. 139.)

*To the Honorable General Assembly,*

Whereas, the General Assembly were pleased by an act bearing date, October 1740, to grant to Messrs. Fitch, Wyllys & Walker, the sole privilege of making steel, for the term of 15 years, upon this condition, that they should, in the space of 2 years, make half a ton of steel: The aforesaid 2 years being expired, and the condition not complied with,—application being made to the General Assembly in October last, they were pleased to renew the grant, upon condition that half a ton of steel should be made before the setting of the Assembly in October, 1744.

These are to certify and inform your honors, that after many expensive and fruitless trials, with which sundry of the owners were discouraged, the affair being still pursued by others of them, it has so far succeeded, that there has been made more than half a ton of steel at the furnace in Simsbury, which was erected for that purpose by the gentlemen to whom the aforesaid grant was made.

AARON ELIOT,

ICHABOD MILLER.

(Industry I. 141.)



To the Honorable, &c.

October, 1744.

They add—And as a specimen of the goodness thereof, to answer the intentions of German steel, I, the said Aaron Eliot, who have had the care and oversight of said business, and performed said work, do herewith present to your honors for examination, instruments made with the said steel, made at Simsbury, aforesaid: And pray in behalf of said grantees and their assigns, that this Assembly would order a record to be made, that the condition of said grant appears to have been fulfilled to the satisfaction and acceptance of this Assembly: which will greatly oblige, &c.

AARON ELIOT, in behalf, &c.

(Industry I. 142.)

Assembly so declare and order, Oct. 1744. (143.)

To the Honorable, &c.

May, 1772.

The memorial of Aaron Eliot, of Killingworth, humbly sheweth:

That your memorialist has, for a number of years, carried on the steel manufactory in this colony, and has made very large quantities, sufficient to supply all the necessary demand of that article in this colony, as well as to export large quantities for supplying the neighboring governments; and that the fortune of your memorialist has not been large enough to supply himself with a sufficient stock to carry on the business; and has therefore hitherto been obliged to procure his stock of iron at New York, on credit, and pay for the same in his steel when made, at the moderate price of £56 the ton, from whence it has been again purchased in this colony at the price of £75 and £80 the ton. And for several years past, almost the whole supply of steel in this colony has been from New York, of the manufacture of your memorialist at the aforesaid enormous advance: and your memorialist himself conceives, that the interest of the colony is to encourage necessary and advantageous manufactories within this colony, not only for the necessary consumption of the colony, but for export, which your memorialist will be able to effect, in the aforesaid article of steel, with some small assistance from your honors, to procure him a sufficient stock, and thereby save large sums of money within this colony which is annually paid to New York for the steel manufactured in this colony.

Wherefore your memorialist humbly prays your honors to loan him £500 out of the public treasury, for three years, without interest, whereby he will be enabled to carry on the aforesaid business to considerable public advantage. And he, &c.

AARON ELIOT.

(Industry II. 144.)

Assembly granted him said loan, May 1772. (145.)

To the Honorable, &c.

The memorial, &c.

Your memorialist further shews, that at present it will be very inconvenient for him to repay said sum, as he hath lost a large quantity of his steel in a store at Boston, where it was deposited for sale; his market at New York is interrupted, and he hath exerted himself to lay in a large stock to supply the demand for steel in this colony, which, in the course of the last summer, is greatly increased; and from the particular situation of public affairs, and from the great difficulty of procuring foreign supplies.

And thereupon he humbly prays that the loan of said money may be continued to him for the space of two years longer, or such lesser term as to your honors shall seem meet: And that a suit which the treasurer hath commenced



against him and his surety, upon your memorialist paying the cost that hath arisen, may be discontinued: And your memorialist, if required, is ready to give any farther security that may be demanded.

AARON ELIOT.

Dated at New Haven, Dec. 21st, A. D., 1775. (Industry II. 146.)

Assembly extend the time of payment two years. (146.)

### BELLS.

*To the Honorable, &c.*

The memorial of Abel Parmele, of New Haven, humbly sheweth:

That, whereas, your memorialist has been at great expense of both time and money, in order to gain the art and skill of casting large bells for the use of churches, schools, &c., and hath made such experiments as that your memorialist is well assured that he can perform, to good acceptance, and much for the public advantage of the government: Considering,—

1. Your memorialist can perform the work cheaper, allowing the discount of our currency with that of Great Britain, than it can be brought from foreign parts.

2. The best and principal product of our land will scarce, at any rate, make returns.

3. A great part of the materials of which such large bells are made, are the product of our country, and almost wholly useless for any other service.

4. If a bell should happen to be split, as many are, the recasting again here will save the great expense of transportation, the risque of the seas, &c.

And now your memorialist begs leave to remind this Honorable Assembly, that the performance of such as hath not been attempted, as yet, in the country, and the charge and expense of an undertaking so great; and calling to mind how ready your honors have been duly to encourage such undertakings, and your unwillingness that any suffer thereby; and your memorialist being desirous of reaping the benefit of his own study and industry, humbly requesteth of this Honorable Assembly, that he may have the whole profit and management of said affair of making and vending large bells within this colony of Connecticut, for the space of 20 years next coming: And that for the term aforesaid, no other person without the license of your memorialist, shall, within this colony, presume to set or make any bell of a larger size than 10 inches diameter, or for some shorter term, or some other way, as you, in your great wisdom think best, to encourage your humble memorialist. And your memorialist, as in duty bound, &c.

New Haven, Oct. 19, 1736.

ABEL PARMELE.

Negatived in both Houses.

(Industry I. 129.)

### POLISHING CRYSTALS.

*To the Honorable, &c.*

The memorial of Abel Buell, of Killingworth &c., humbly sheweth:

That your memorialist having been convicted &c., of being guilty of altering the bills of public credit of this colony, &c. And whereas, this Honorable Assembly did so far compassionate the youthful follies of your memorialist as to give him enlargement from prison, where, by the laws of this colony, he was sentenced during life, and permitted him to dwell with his family in Killingworth, &c. Since which, duly sensible of his past error and offence, for which he justly suffered, he has with diligence applied himself to industry for



the support of his family. And your memorialist would humbly beg leave to inform your honors, that in prosecuting the business of his calling, he hath discovered a method of grinding and polishing crystals and other stones of great value, all of the growth of this colony, and that without the aid or direction of any person skilled in the art, by which discovery, a great saving and advantage will accrue to this colony, by preventing the importation of such stones from abroad: And whereas, by the late laws of this colony, this Honorable Assembly were pleased to offer a premium to any person who should make any useful discovery for the advantage of this colony; your memorialist relying on the mercy and clemency of this Honorable Assembly in forgiving offences, on proper evidence of repentance and reformation, is encouraged to implore their gracious interposition, and that your honors would restore your memorialist to those liberties and privileges which he has justly forfeited, at least so far as may enable him to carry on the business, in all its branches, of so useful a discovery made by your memorialist, so as to render the same extensively advantageous to the colonies in general, and to this government in particular. And your &c. ABEL BUELL.

Dated in Killingworth, 8th day of Oct. A. D. 1766. (Industry II. 126.)

Certificate of justice of peace and townsmen, to his good behaviour, Oct. 8, 1766. (128.)

He is restored to all those liberties and privileges by him forfeited, on giving bonds, &c. (127.) [See the following memorial.]

#### TYPE FOUNDING.

To the Honorable, &c., October, A. D. 1769.

The memorial of Abel Buell of Killingworth, &c. humbly sheweth:

That your memorialist having experienced the great goodness of this Honorable Assembly, for which he begs leave to render his most grateful tribute of thanks, and to assure them from a grateful sense of their clemency, he has made it his unwearied study to render himself useful to the community in which he lives, and the American colonies in general; and by his unwearied application for a number of months past, has discovered the art of letter founding. And as a specimen of his abilities, presents this memorial impressed with the types of his own manufacture: And whereas, by an ancient law of this colony, this Assembly were graciously pleased to enact, that any one who should make any useful discoveries, should receive an encouragement therefor, from this Honorable Assembly; and as the manufacture of types is in but few hands, even in Europe, he humbly conceives it to be a most valuable addition to the American manufacture; and as the expense of erecting a proper foundry will be great, and beyond the abilities of your memorialist, he humbly hopes for encouragement from this Assembly, either by granting him the liberty of a lottery for raising a sum sufficient to enable him to carry on the same, or in some other, &c. ABEL BUELL.

(Industry II. 137.)

[The type, about Brevier with Bourgeois body, is more beautiful than any specimen we have seen of that period, and the impression better than the present average of Congressional Documents.]

Referred to a committee who report. (138.)

We have conferred with said Buell, &c., and are fully convinced that he hath discovered the art of letter founding; and that he is capable of making instruments necessary for the proper apparatus of letter founding, &c.



And on their recommendation the Assembly resolve, That the treasurer of the colony be, and he is hereby directed to pay out of the public treasury to said Buell, £100, upon his giving bond, &c. in the sum of £200 condition, that he set up and pursue within one year next after the receipt of said £100, the art of letter founding in this colony, and not depart therefrom to reside in any other province or colony within seven years next after the receipt of said money, and re-pay said £100 at the end of said seven years; and that in case said Buell pursues said business in this colony, the space of 12 months after receiving said £100, the treasurer is hereby further directed to pay said Buell one other £100, (payable as above,) &c. (139.)

*Sir*.—The long absence of my husband, makes me almost despair of ever seeing him again, &c. When he left me, it was unknown to me that he was so much involved as he was; and in a very few days, every thing was seized from me. I have by dint of industry got together so much, that I can now refund the money which he had of the state, &c. If, therefore, the £100 can be accepted in full for the demand against us, I am ready to pay it, &c.

I am, &c.,

ALETTA BUELL.

New Haven, August 8, 1777.

(Industry II. 158.)

Assembly order the bond to be given up on the payment of said £100. August 1777. (157.)

(Abel Buell's name again appears among the petitioners of New Haven, for a tariff of duties on imports, October 12, 1785.) (Industry II. 201.)

### PIN MANUFACTURE.

*To the Honorable, &c.*

The petition of Leonardus Chester of Wethersfield, &c., humbly sheweth: Whereas, we are obliged totally to withdraw commerce from the parent state, and we have wantonly and negligently been dependent on them for most of the ornamental, as well as useful articles of life, to the almost entire neglect of manufactures and arts,—those stabilities of wealth and affluence—esteeming it a surer and easier method to gain wealth and riches by agriculture, yet drove to the last resource of breaking off all connection, which has, to mutual advantage, so long subsisted, we find that our dependence has been so great and universal, that we sensibly feel it in the minutest trifles. And to avoid the discomfitures and sufferings, we might otherwise subject ourselves to, it behooves every well disposed mind to parry the thrust by every lawful method in his power, as well individuals as societies of men.

Actuated by these principles, your petitioner has turned his attention to *arts* and *manufactures*, and while others have been industriously busied investigating some method to end the present grand dispute, your petitioner has been engaged as far as in him lay, and perhaps as far as any individual in this colony, to make provision for an easy contest, and has with great expense, erected a manufactory house, and engaged a number of useful and necessary manufacturers in various branches in a particular manner. The pin manufactory never before attempted in this colony, which at first blush to a person unacquainted with the work, would seem so diminutive and trifling as to the expense, that any person of a moderate fortune, might attempt and execute within himself; yet your petitioner begs leave to acquaint this Honorable House, that although he did most minutely and critically sit down and count the cost, it has, owing to innumerable embarrassments and difficulties, sur



passed his calculation. Under all embarrassments, he has, however, thus far completed the works, that he can by samples, demonstrate, that they can be made as well as in London, and upon as fixed principles, saving the prime cost and charges of the wire; which to carry into an extensive execution, will demand a larger capital than your petitioner, exclusive of his other business is able to advance, especially at the dead crisis of collecting debts.

Your petitioner, therefore, by advice of his friends, and numbers of well disposed persons of worth, has taken this method, and humbly prays that this Honorable House will be pleased to look into the premises, and appoint a committee to inspect the works, and report the practicability of its execution, and certainty of an easy supply of that article, though trifling at first view, yet essentially necessary to the community, and on that principle *important*, as every individual will be affected by the want, which said committee may be vested with such power as to advance such a sum of money from the public treasury upon good security, as shall execute the design: Or, as the call is at present so loud, and a considerable sum of money might profitably be advanced for wire, which might immediately be worked up to advantage, judging, that at this time of stagnation of cash, your petitioner as aforesaid, not being able to collect his dues, this House would not wish that your petitioner should be obliged to part with his paternal interest for the service of his country; that they would encourage him by bounty, or a loan of a certain sum for a certain time, interest free; the way your Honors shall think most eligible, will confer a favor and advance the public good. And your petitioner, &c.

LEONARDUS CHESTER.

Wethersfield, December 21st, 1775. (Industry II. 153.)

Referred to a committee who report:—

That one method of encouraging said manufacture may be by premium or bounty.

\*\* That a bounty or premium of 3d. on the pound, may be proper to be given for every pound of good merchantable pins that shall be made in this colony within one year, &c.; and 1d. on the pound, &c., the next year after, &c.

We beg leave further to report, that Mr. Leonardus Chester, appeared before us, and represented that he had contracted with, and hired a workman and five hands well skilled in the pin manufactory, and hath already advanced £1700 towards providing buildings, tools, machines, and materials for carrying on the manufactory aforesaid. That the expense of setting up the same greatly exceeds his expectations. That his stock is so far exhausted in preparations, that he is not able to procure stock to employ said workman. And that in case he could be indulged with a sum of money for a term, interest free, he would be willing to submit to the following conditions, to wit: that his manufactory should be open to the inspection of the General Assembly, that he would be laid under obligation to sell his pins at a reasonable profit, to be determined by the General Assembly, and give security to apply the money received wholly to carry on said manufactory under penalty, &c. Whereupon, &c. a loan of money, without interest, to said Chester, is another method by which said manufactory may be encouraged, &c. (154.)

After disagreeing votes, the Assembly order a continuance to the next session. So it ended.



## CLOCK THAT SHALL WIND UP ITSELF.

*To the Honorable, &c.*

The petition of Benjamin Hanks of Litchfield, humbly sheweth to your Honors:—

That your petitioner after unwearied trouble, pains, and study for a number of years now last past, in search of mechanical knowledge, not only for his own pleasure and amusement, but for the benefit of mankind, has made a large improvement thereon, by inventing, contriving and executing a clock or machine that winds itself up by help of the air, and will continue so to do without any other aid or assistance, until the component parts thereof are destroyed by friction; which will keep the most regular time of any machine yet invented, as it is ever wound without any variation or stop to her motion, and consequently not only a great ornament, but improvement in mechanism, which your Honors' petitioner will submit to your Honors, and beg them to take the matter into their wise consideration; and as he has been at great pains, trouble and expense, in accomplishing the same, that they would graciously grant unto your petitioner, the sole and exclusive right and privilege of making and vending said kinds of clocks for the term of 14 years, or some other way, &c.

BENJAMIN HANKS.

Dated at Litchfield, this 6th day of October, A. D. 1783.

(Industry II. 181.)

Lower House at first, negative his petition; but finally, such exclusive privilege is granted. (182.)

## STEAM ENGINE.

*To the Honorable, &c.*

The petition of Barnabas Deane humbly sheweth:—

That your petitioner, for valuable considerations given to certain ingenious persons in Great Britain, the first and original inventors of the new improved steam engine, (who, by act of Parliament of Great Britain, have an exclusive right to construct and use the same within that kingdom, for the space of 25 years :) your petitioner has acquired a perfect knowledge of the construction thereof, with new improvements, and the application thereof to a great variety of important purposes; such as the raising of water, the manufacturing of iron, and to the working of corn mills, saw mills, and of mills of every kind. Your petitioner, therefore, humbly prays that an act of assembly may be passed, to give and grant to your petitioner, and to his heirs and assigns, the sole and exclusive right and privilege of erecting and making use of the afore-said steam engine, for the purpose of manufacturing of iron, and of working of corn mills, saw mills, and mills of every other kind, for and during the term of 20 years from the date of such act or grant, in and throughout this state. And your petitioner, &c.

BARNABAS DEANE.

Dated in Hartford, May 27th, 1786.

Negatived.

(Industry II. 213.)

*John Fitch*, the inventor of the *Steamboat*, was a native of Connecticut, and it is said, made his first experiments in the Connecticut river.

*Ship Building* has ever been carried on from the earliest period in Connecticut, but no special privileges were ever granted.



## DRILL PLOUGH.

To the Honorable, &c.

Oct. 1771.

The petition of Benoni Hilliard, of Saybrook, humbly sheweth :—

That the society established in London, Anno Domini, 1753, for *Encouragement of Arts, Manufactures and Commerce*, in order to incite and stimulate persons to make improvements in the arts and in manufactures, and to the discovery of further advantages in commerce and agriculture, and every useful part of learning, from time to time, have given præmia on new inventions, proving useful either in the culture of lands, or in further promoting and advancing the arts, manufactures or commerce; and more especially, on the 10th of April, A. D., 1765, at a meeting of members of said society, in the *Strand*, in London, duly convened according to the rules and orders of said society, they voted a premium of fifty pounds sterling for the best drill plough that should drill, sow and cover the corn or seed at the same time, being an improvement upon such drill ploughs as were then already known or in use. And said society, on the 30th of May, A. D., 1764, resolved, that no member of said society should thereafter be a candidate for, or entitled to receive any premium, bounty or reward whatsoever, except the honorary medal of said society. And your petitioner, being under low circumstances, was moved and induced by the said offer of the premium of fifty pounds, as aforesaid, to undertake to make a drill plough, such as should be an improvement on all drill ploughs at that time known and in use; and after much time, study and perplexity of mind, effected the same, and constructed a drill plough, such as he judged would merit the premium offered as aforesaid. And your petitioner being a person of obscure life, and little acquainted with persons of rank and figure, in order to obtain said premium, applied to Benjamin Gale, Esq., of Killingworth, &c., a neighbor to your petitioner, and who was also a corresponding member of said society, to advise and assist him in procuring said bounty and premium. And said Gale undertook to negotiate and transact said business for your petitioner, so as to obtain said premium; and in consideration thereof, your petitioner was to give said Gale one-half said premium when received, as a reward for his services in procuring the payment thereof; and as it is contrary to the rules and orders of said society, for any member to receive a bounty; and also by the rules and orders of said society, if any person should be detected in any disingenuous methods to impose on the society, such person shall forfeit the bounty for which he is a competitor, and be deemed incapable of obtaining any premium thereafter: It was therefore agreed between said Gale and your petitioner, to keep secret the aforesaid bargain respecting the division of said premium, and that said Gale should solely transact all matters relating to the obtaining the premium aforesaid. And your petitioner, confiding in the honor and fidelity of said Gale, in the matters aforesaid, sometime in the year 1765, delivered the said drill plough, by him solely invented and constructed, unto said Gale, that he might transmit the same to said society, and obtain the premium therefor, if the same should be judged to merit the offered bounty, to be divided as aforesaid. And said Gale received the said plough for that purpose; and said Gale having so gotten said plough into his possession, in order to procure a great name and character of a person of skill and ingenuity, and to spread abroad his fame and reputation, did most unjustly and falsely write and declare to said society that he, said Gale, was the sole inventor and constructor of said plough; and said society having received said plough, adjudged the same to merit the of-



ferred premium, as aforesaid, and to be a great and valuable improvement on all drill ploughs before known and in use. But the said Gale being a corresponding member, by the rules and orders aforesaid, could not receive the bounty aforesaid, (he being supposed to be the inventor and constructor of the aforesaid plough) and therefore said society struck a golden honorary medal for said Gale, to perpetuate his fame and reputation as a gentleman of a fruitful invention, and very useful to his fellow-men in his day and generation; which medal said Gale has received, and the same is in value, in money, worth £7. 10s. L. M. By all which misrepresentations and fraudulent transactions of said Gale, your poor petitioner has lost the benefit of the premium aforesaid, is defeated in his expectations, by the fallacious and fraudulent doings of said Gale as aforesaid, and said Gale refuses to pay and satisfy your petitioner any part of said £50. Your petitioner would further represent to your honors, that as said Gale is and was a gentleman intrusted in many and important places of public trust, the execution of which, your petitioner conceived; would never be committed to any but such as your honors esteem to be persons of fidelity and virtue, he in his humble station was induced, by the public character of said Gale, to put great confidence and trust in him, and thereby, in some parts of the aforesaid representation, may not be able fully and clearly to evince the same, without the testimony of said Gale, or of your petitioner; although he is able, he conceives, to render the same highly probable in every part thereof, by other and disinterested witnesses, and in many of the material parts thereof, fully to evince the same.

Wherefore, your petitioner humbly prays your honors, by yourselves or a committee, to inquire into all the aforesaid matters, by the oaths of the parties, and other evidence, or otherwise, as shall be thought fit; and that said Gale may be, by your honors' decree, held to pay and satisfy your petitioner the sum of £50 sterling, or such part thereof as your honors shall think just and reasonable, or in some other way, &c.

Dated in Saybrook, August 22, A. D., 1777.

(Industry II. 148.)

BENONI HILLIARD.

Petition was withdrawn.

## POTTERY.

*To the Honorable, &c.*

The memorial of Samuel Dennis, of New Haven, humbly sheweth:—

That he is acquainted with the potter's business, and is about to erect a stone pottery; and there is in this country a plenty of clay, which he presumes of the same kind with that from which the queens-ware of Staffordshire is usually made; and that he wishes to erect a pottery for the purpose of manufacturing the finer kinds of ware usually made in Staffordshire, particularly the queens-ware; that the expense of this undertaking, of procuring the requisite information, and the workmen acquainted with the business, is too great for his property. Your memorialist conceives that the public would be so greatly benefited by a work of this nature, and particularly by obtaining and diffusing the knowledge of the business, that your honors will readily afford him some assistance. The manufacturing of those articles would be attended with not only the advantage of saving the expense in the country, but would probably, in a short time, very greatly reduce the price of them, as they now come to the consumer at two or three times the original cost, by reason of the high freight and other charges. Your memorialist thinks, that by the aid of £250 or £300, he could complete the business, and he would



give sufficient security to lay out the money for the aforesaid purpose, and to repay the sum within three years. Your memorialist, therefore, prays your honors to loan him that sum without interest, for said three years, on those conditions, &c.

SAMUEL DENNIS.

New Haven, October 9, 1789.

Negatived. (Industry II. 242.)

### GLASS.

*To the Honorable, &c.* May, 1747.

The memorial of Thomas Darling of New Haven, in the county of New Haven, humbly sheweth to this Honorable Assembly:

That whereas, your memorialist has taken pains to inform himself in the art and mystery of making glass, and is persuaded that, by your Honors' leave and with proper encouragement, he can carry on the affair, so as to be beneficial both to himself and this government. The charge for setting up works for that business being great, and some considerable length of time required before they can be profitable—For

*First.*—He may be obliged to send to England for workmen, not being able to procure them at Philadelphia, and they main't be able to get here in a year or two, by reason of the difficulty occasioned by the war.

*Secondly.*—It will take considerable time to build the furnace, for it is dubious, whether the clay may be found here, either to build the furnace of, or to make the pots that contain the metal.

*Thirdly.*—There may be much time spent in experiments upon sand: for though all sand contains a glass, yet it may not answer either as to the quantity or quality; for some sand yields so little, that costs of fluxing and blowing could never be answered; and other sand, though it may yield in good proportion, yet it main't be sufficiently transparent, which is the peculiar excellency of glass.

Many other difficulties your Honors can easily perceive, may arise in an affair so great with so many dependencies, so that your memorialist main't be able to carry on the affair, either for his own benefit, or the public's in 4 or 5 years.

Wherefore, he humbly prays this Honorable Assembly, would grant your memorialist and his assigns, by your Honors' patent, the sole liberty and privilege of manufacturing and making glass within this government, for the space and term of 25 years next coming, or as long as your Honors shall think fit. And your, &c

THOMAS DARLING.

(Industry I. 159.)

Hartford, May 1747.

*On the memorial, &c.*

It is resolved by this Assembly, That the memorialist and his assigns, shall have the sole liberty and privilege of making and manufacturing glass in this colony, &c. for the space of 20 years from this time; and all and every other person and persons are hereby forbid and prohibited setting up, erecting, and carrying on any works, buildings, or materials for carrying on the business of making glass as aforesaid, in this colony for the space of 20 years next coming, without the liberty of the memorialist or his assigns, on penalty that every such person or persons so doing, shall forfeit the sum of £1,000 money, to be recovered, &c.

Provided, nevertheless, that if the memorialist and his assigns shall neglect



or fail to erect, set up and prepare suitable works and materials for the making of glass, as aforesaid, for the space of 4 years, or shall fail of making the quantity of 500 feet of good window glass, in any one of the remaining 16 years, after the aforesaid 4 years, that then this grant and every part thereof, shall be void, &c.

May 1747. (Industry I. 160.)

*To the Honorable, &c.*

The memorial of Elijah Hubbard of Middletown, Isaac Moseley of Glastenbury, Wm. Little, Jr. of Lebanon and Pickett Latimer of New London, &c., humbly sheweth:—

That they are desirous to erect a glass house, and set up and carry on the manufacture of glass of various kinds within this state. That upon inquiry, they find the introducing this manufacture into the state, will be attended with great expense and risque; and in case of success, will not be attended with sufficient profit to compensate the trouble and expense, if others availing themselves of the labors and experience of the first adventurers should establish rival works, as soon as they have collected workmen, and overcome the difficulties of a new adventure, in a manufacture hitherto unknown in this state.

Whereupon, they humbly pray your Honors to extend your gracious encouragement and protection to them; and upon condition, that they do within one year erect a glass house, and begin to manufacture glass within this state, for and during the term of 20 years next ensuing,—or for and during such term as to your Honors shall seem meet. And they, &c.

ELIJAH HUBBARD, *et al.*

Dated at Hartford, this 18th day of October, A. D. 1779.

(Industry II. 169.)

Granted during the pleasure of the Assembly. (168.)

*To the Honorable, &c.*

The memorial of Isaac Moseley and William Little, Jr., &c., humbly sheweth, &c.

\*\*\* That the said Hubbard and Latimer, upon consideration of the great expense and risque to be incurred, have declined to proceed further in said business; and that your memorialists, earnestly desirous to proceed in said business, have, at much expense of time and money, endeavored to inform themselves of the necessary cost of erecting works, and setting up said manufactory, and find that the cost of works, utensils and lands, will amount to about £3,000, L. M. as in 1774: That a number of able and experienced workmen may be obtained at a great expense, who are, nevertheless, slow to engage upon account of the expense and damage arising to them, by removing their families, &c. Your memorialists are willing yet to risk their time and fortunes in an attempt to introduce so useful and necessary a manufacture, but do not think themselves able to do it without some further encouragement from the public.

And thereupon, they humbly pray your Honors to grant them liberty [to raise] £2,000 in good and lawful money, or the value thereof in bills by lottery, as your Honors shall think meet, under such restrictions and regulations as may be judged proper, to enable them the better to set up and introduce said manufacture, or in some other, &c.

ISAAC MOSELEY.

WILLIAM LITTLE, JR.

Dated in Hartford, the 8th day of June, A. D. 1780. (Industry II. 173.)



*Upon the memorial, &c.*

As a further encouragement to their undertaking and carrying on so useful and necessary a manufacture, [they] shall have and enjoy the sole and exclusive right of manufacturing glass within this state for 15 years, from and after the 1st day of July, 1780, upon conditions that they establish such manufactory as aforesaid, by the 1st day of November, 1781, and that, from that day forward, during the continuance of this grant, carry on in a regular manner, the business of such manufactory, so as to furnish for sale the usual quantities of glass, which are commonly made and sold at such kind of manufactories. (Industry II. 174.)

*To the Honorable, &c.*

The memorial of Wm. Pitkin, Samuel Bishop and Elisha Pitkin, humbly propose to your Honors—

Whether manufacturing glass in this state will not be for the public emolument of the same; and if it be thought an object worthy the attention of your Honors, they will, if properly encouraged, erect works and pursue said business. Money out of the public treasury in this distressing day, we do not expect; but an exclusive right to such manufacture, such length of time as may be thought proper to save them the great expense that will be necessary in buildings, &c. for said purpose, &c. And if the proposal meets your Honors' approbation, we pray a committee to hear your memorialists in the premises, and report, or any other way, &c.

WM. PITKIN  
SAMUEL BISHOP.  
ELISHA PITKIN.  
(Industry II. 179.)

Hartford, January 28th, 1783.

Referred to a committee, who report. (179.)

It will be a benefit to this state, to grant to the memorialists an exclusive right of manufacturing glass, for the term of 25 years, from and after the time they shall begin the first blast. And that the memorialists ought to be exempted from all assessments on account of the profits which may arise by manufacturing glass for the term of 10 years, from the rising of this Assembly.

Granted, on condition they begin manufacturing within three years.

(Industry II. 180.)

*To the Honorable, &c.* Oct. 1789.

The memorial of George Pitkin, Richard Pitkin, Wm. Pitkin, Jr., George Pitkin, Jr., and Richard Pitkin, Jr. of East Hartford, &c.; Aaron Bissel, Epaphias Bissell, and Daniel Ellsworth of East Windsor, and George Hale of Glastenbury, &c., humbly sheweth:

That your memorialists, conceiving that the erecting of glass works would be of public utility, and hoping they would prove to be of private advantage, have been at great expense in erecting buildings and furnaces, and providing materials, and procuring workmen for the purpose of establishing and carrying on a glass factory. That besides, &c., they have been subjected to great losses and disappointments, by means of one Robert Hughs of Boston, who entered into partnership with the memorialists, and engaged to furnish a large proportion of the stock for carrying on said factory; and who having induced your memorialists to believe, that he was a person well skilled in the aforesaid manufactory, was by them appointed and employed to superintend, and direct the business of their glass works; but the said Hughs utterly failed of furnishing stock, and also proved by his subsequent conduct, to be totally un-



skilled in the business of said factory. And the memorialists would further represent to your Honors, that the expense of carrying on said factory is greater than they expected, &c. That notwithstanding the aforesaid losses and disappointments, as the memorialists possess buildings, and have a considerable stock on hand, to be employed in said factory, they have proceeded to engage a number of workmen, and with such encouragement as might be afforded by the Legislature, without being burdensome to the public, they think they might prosecute their undertaking with success. The memorialists, conceiving that the prosperity of the State is intimately connected with the introduction and improvement of manufactures, and that the making of glass is one of the most important manufactures that can be introduced among us, &c., pray your Honors to interpose and grant them a lottery for the purpose of raising the sum of £400, &c.

GEORGE PITKIN, *et. al.*

East Hartford, Oct. 6, 1789.

(Industry II. 239.)

Lottery so granted, and managers appointed. (240.)

### P A P E R .

Upon the memorial of Christopher Leffingwell, of Norwich, &c., preferred to this Assembly, &c., May, 1768, and by continuance comes to this Assembly, shewing that he hath, at great expense, erected a paper mill in said Norwich, and procured workmen for the making and manufacturing various kinds of paper, &c., praying that a bounty may be granted him, on all paper made and manufactured in his said paper works, &c. And farther, it appearing to this Assembly that sufficient materials for making paper are and may be had in this colony.

Resolved by this Assembly, that the said Christopher Leffingwell be allowed and paid out of the treasury of this colony, two pence the quire on all good writing paper, and one penny the quire on all printing and coarser paper, that shall be made and manufactured in said paper mill, during the pleasure of this Assembly.

And it is farther resolved, that the said Christopher Leffingwell shall render an account annually, to the treasurer of this colony, of the quantity and kinds of paper made and manufactured in said paper mill in each year, duly attested upon oath, and upon his producing such account duly attested as aforesaid to the treasurer of this colony, the said treasurer is hereby directed and ordered to pay the said bounty as above stated, annually, at the expiration of each year, from and after, &c. May 1769. (Colony Records X. 439.)

At the end of the first year, May 1770, Leffingwell presented his affidavits and bill for manufacturing

4,020 quires of writing paper at 2d.	£33 10s. 0d.
10,600 " printing &c., paper, at 1d.	48 6s. 8d.

Which was paid him, and bounty discontinued.

(Industry II. 140 to 142.)

To the Honorable, &c.

The memorial of Hannah Watson and Sarah Ledyard, of Hartford, humbly sheweth:

That their lately deceased husbands, Ebenezer Watson and Austin Ledyard, in their lifetimes, and a few years since, had jointly, and at great expense, erected a paper mill in East Hartford, complete and excellent as any one upon the continent, and which had now begun to be of advantage to the owners, and great utility to the public, as it wholly supplied the press of



Hartford, (from whence issue weekly more than 8,000 newspapers) a great part of the writing paper used in the state for one year past, and had supplied large quantities for the use of the continental army, and officers: but most unfortunately for the memorialists, on the night after the 27th inst., in a manner to them unknown, (though suspected to be by means of some evil minded person) took fire and was wholly consumed, with all the effects therein, being about 20 reams of paper, and materials for 300 more, &c. Capital loss of more than £5,000, &c.

Dated at Hartford, Jan. 28, 1778.

HANNAH WATSON,  
SARAH LEDYARD.

(Industry II. 159.)

Assembly grant them a lottery to raise £1,500. (160.)

### TORPEDO.

(Of this important invention to destroy an enemy's shipping, but little appears on the files and records.)

At a meeting of the Governor and Council of Safety, Feb. 2, 1776—

Mr. [David] Bushnell was here by request of the Governor and Council, &c., and gave an account of his machine contrived to blow up ships, &c., and was asked many questions about it, &c., &c.

Voted, That we hold ourselves under obligations of secrecy about it. And his Honor the D. Governor is desired to reward him for his trouble and expenses in coming here, and signify to him that we approve of his plan, and that it will be agreeable to have him proceed to make every necessary preparation and experiment about it, with expectation of proper public notice and reward. (Council of Safety I. 73.)

Feb. 3, 1776.—Moved by the Governor, by motion to him from Governor Griswold, that some encouragement should be given to enable Mr. Bushnell to pay expenses incurred in preparing his machine for the design projected, &c., and to carry forward the plan &c., &c., it appearing to be a work of great ingenuity, &c. &c., a prospect that it may be attended with success, and being undertaken merely to serve the public, and of considerable expense and labor, &c. It is thought reasonable that something should be done, &c.

Voted and ordered, That the treasurer pay and deliver to his Honor, the Deputy Governor, the sum of £60, to be by him improved for the use of the colony and public, according to instruction from the board.

(Council of Safety I. 76.)

### WATER MILLS.

*To the Honorable, &c.*

The memorial of David Bushnell, of Saybrook, in New London county, humbly sheweth—

That your memorialist, after long application to mathematical and philosophical studies and frequent and expensive experiments on mechanical improvements, hath discovered a new method of constructing water mills in such a manner,—by projecting the flume under the water wheel, so that the aperture through which the stream flows against the wheel, shall be advanced beyond a line let fall perpendicular from the extremity of that part of the wheel which is nearest the pond, and by placing the buckets of the water wheel obliquely to the radii of the wheel, and perpendicular to the stream which turns it,—that the force, action and impression of the same stream in



turning the mill will be greatly increased, and in many cases, trebled beyond what it can be in mills of the usual construction: And has also discovered a further valuable improvement in grist mills, by fixing the rounds or leaves of the trundle head, so as to swivel or turn in the trundle head, whereby the friction in turning the mill will be greatly diminished: Which improvements, the memorialist conceives, will be of general utility to the public. And whereas, for perfecting and completing said invention and improvement, the memorialist finds it necessary to put himself to considerable additional expense, and employ his time and attention for a proportionable period.

Wherefore, your memorialist humbly prays this Honorable Assembly to grant him the sole right of constructing, altering and repairing water mills in the State, in the manner and according to the improvements above described, for such term as shall be adjudged reasonable, as a compensation to the memorialist; and further order and enact, that whoever, within this State, shall, during such term, construct, alter or repair any water mill, in the manner and according to the improvements aforementioned, either in part or in the whole, without license from the memorialist in writing first had and obtained, shall forfeit and pay to the memorialist such penalty as your honors, in your wisdom shall judge proper. And your memorialist, &c.

DANIEL BUSHNELL.

Dated at New Haven, this 28th of Oct. 1784.

Negatived.

(Industry II. 189.)

### PERPETUAL MOTION BY WATER.

*To the Honorable, &c.*

The petition of Harris Ransom, of Colchester, in said State, humbly sheweth:

That your petitioner, at great expense, with much pains, labor, and study, has obtained the art or mystery of making a perpetual motion of water, whereby he is able and can raise the water from any river, pond, spring or fountain, to the height of 30 feet perpendicular, and convey the same to any parts of any towns or cities, or return the same to the original fountain or head, which said performance will be of great advantage; not only to the petitioner, but to the public in general, by affording them at all times, good and wholesome water at a very trifle of expense; and also will provide all towns and cities with constant and unfailing streams, sufficient for the carrying any iron works and mills of all kinds:

Wherefore your petitioner humbly prays this Assembly to grant unto him and his heirs, a full power and license, under certain restrictions, to set up and erect his said works within this State, and that no person shall be allowed to set up any such works after the pattern of those by your petitioner so set up, within the term of 20 years, without a license first had and obtained from your petitioner; and that all such machines, mills, &c. set up by your petitioner for his own improvement, shall be free from all taxes and assessments for the term of 100 years, and that all such works set up by others licensed by the petitioner's license shall be free from all such taxes for the term of two years after erected. The petitioner being restricted in setting up his said works, not to obstruct any water to the damage of any individual person, or to the public in general. No action by Assembly. (Industry II. 216.)

Filed—"Prisoner in goal, memorial."



*To the Honorable, &c.*

As there is a new discovery of raising the water up, so as to turn it out of the valleys, and turn it into the hills to water the dry land, and to carry mills or to carry iron works or any other water craft, to water cities and towns, to drain dead swamps and ponds—since the thing is so profitable to this State, 'tis the earnest request of us all as one, that this petitioner's petition may be heard and granted him. Signed by  
(Industry II. 217.) ISRAEL NEWTON,  
and 8 others.

### TIDE MILLS.

*To the Honorable, &c.*

The memorial of John Shipman, of Saybrook, in New London county, humbly sheweth:—

That by reason of extreme drought, the inhabitants of sundry towns in this colony, have been greatly distressed, as well for want of grinding grain, as in other respects; an instance of which is in the town of Saybrook, especially the first parish, where there hath not been, for four months next before the 18th inst., twenty bushels of grain ground in said parish; and the inhabitants have been obliged to carry all their grain out of town, in order to have it ground, and great part of it more than twenty miles, at great expense of time and money, and are now reduced to the necessity of carrying it to Long Island, and have been sundry times obliged to leave it, for want of wind to carry the wind-mills, and the inhabitants in the meantime distressed, for want of bread; by which your honors' memorialist hath been induced to turn his mind much on the subject of mills, especially such as might be made by salt water. And as the tides in the salt water creeks towards the eastern part of the colony, especially where they run near the uplands, don't ordinarily ebb and flow more than two feet and a half, it renders the use of salt water for the purpose aforesaid, very difficult. Yet your honors' memorialist is confident, that by close application and hard study, he has been so happy, though master of but little philosophy, as to hit on a plan on which he can build a grist-mill, though with something more than the ordinary expense, that will grind well and to good purpose, 12 hours in 24; and he verily believes, may be so constructed as to go continually, as long as wood and iron will last, without exhausting any considerable part of the water; and as such a discovery, if he should succeed, would be more beneficial to the people in general, especially on the sea shore, than to the particular owner, your honors' memorialist is encouraged to hope that your honors will do something to encourage him in such an undertaking. Therefore, your honors' memorialist, believing in your honors' good disposition to promote a design of such public utility, humbly prays your honors to grant him proper encouragement, either by way of a lottery to raise such sum as your honors shall think best, or a sum by way of premium, to be advanced on the completion of the proposed machine, in case he should succeed; and previous to the undertaking advance £100, or such greater or lesser sum as your honors shall judge fit, by way of loan without interest, for such number of years as your honors shall judge fit; or grant him the privilege of such a constructed mill, to the exclusion of other persons; or in such other manner as your honors, in your great wisdom shall devise. And your, &c.

JOHN SHIPMAN.

Dated at Saybrook, the 19th day of October, A. D., 1773.

Referred to a committee. (Industry II. 149.)

Upon the memorial, &c.



Resolved by this assembly, that the memorialist, &c., have the full and exclusive privilege of constructing, erecting and improving a tide grist mill, on the plan and construction proposed, for the term of forty years, at all places within said town of Saybrook, and within ten miles westward of Connecticut river; provided the memorialist, &c., do erect such mill within the term of five years next ensuing, and constantly keep up the same fit for use and improvement, so as to be beneficial to the public. And all persons are hereby prohibited from erecting or improving any tide grist mill, for the term aforesaid, within the limits aforesaid, without the liberty of the memorialist, &c., on the penalty of £50, L. M.

January 1774. (Industry II. 150.)

### CLOTH MANUFACTURE.

*To the Honorable, &c.*

The memorial of Samuel Loomis, of Colchester, &c., humbly sheweth:—

That he has by great labor and pains, acquired a knowledge of erecting works for the manufacturing of wool, cotton, hemp, flax and silk, upon a new constructed plan, according to certain plans herewith exhibited, which may be done by hand or by water works; and that he can, by such machinery, perform the whole process of taking the aforesaid articles in raw materials, and making them into cloth, in a much easier manner than any now in practice, by which our manufacturers may be encouraged, the price of such cloth lessened, and vast sums of money saved in the state. And your memorialist would represent, that in case the raising of hemp in this state should succeed according to the encouragement given, that he should, by the aforesaid works, be able to manufacture a sufficiency of duck to supply a considerable part of the shipping of the state.

Your memorialist further represents, that said works cannot be erected without the expense of about £2000 L. M.; and that no individual will venture upon so great an undertaking without the public encouragement and security of enjoying the exclusive right and privilege of taking the profits resulting from such an enterprise, until he has reimbursed to himself the expense of erecting such works.

Your memorialist, therefore, prays your honors to take this matter into your consideration, and to grant to him the *sole and exclusive right and privilege* of erecting machines and works for the purpose of manufacturing the articles of wool, cotton, hemp, flax and silk, in the manner aforesaid, within this state for the term of fourteen years; and also grant to your memorialist the sole and exclusive right and privilege of manufacturing the aforesaid articles in such works by him erected, for the term aforesaid; or in some other way grant to your memorialist such public encouragement as the importance of the undertaking justly merits. And your petitioner, &c.

Dated at Hartford, May 28, 1787.

SAMUEL LOOMIS.

(Industry II. 218.)

Plans or diagrams presented by petitioner.

For spinning cotton and wool, . . . . . (219)

“ Loom, . . . . . (220)

“ Carding, . . . . . (221)

“ Spinning flax and hemp, . . . . . (222)

Referred to a committee, who report:—The committee conceive that the interest of this state is concerned to promote various manufactures, and par-



ticularly of this kind, as this will find useful employment for many who might otherwise be idle, give spring to industry and improvement, lessen importation from abroad, gradually turn the balance of trade in our favor, and eventually be the source of wealth and respectability, and therefore every attempt towards improvement in this respect, ought to be regarded in a favorable light.

It cannot be expected that any person would be at the expense and hazard of erecting works of this kind, which will probably cost not less than £2000, and be liable to be defeated of all prospect of advantage, by others who may think proper to do the same after him, but have not courage enough to begin the attempt.

In this view of the matter, the committee beg leave to give it as their opinion, that Mr. Loomis be allowed, for the term of seven years, the exclusive right and privilege of erecting machines and works for the purpose prayed for in his memorial, on the east side of Connecticut river, or within ten miles west of said river, and of using and improving the same for that term; and that for the second term of seven years next following, if he shall so long improve the said works, no person shall be allowed the privilege of erecting similar works within thirty miles of the works he shall so erect within the aforesaid limits.

Provided, that no privilege granted the present sessions of assembly, to promote the manufactures of wool, be affected thereby.

All which is submitted, &c.

Signed per order.

JOHN TREADWELL.

(Industry II. 223.)

Corresponding act was passed May 1787. (224.)

### STOCKING LOOMS.

*To his Excellency, &c.* May 1776.

The memorial of James Wallace, stocking maker, sheweth:—

That your memorialist has been in Wethersfield since December last, during which time he has exercised his trade of stocking making, which he professes himself master of, both in the silk, cotton, thread and worsted way, in all their different branches. That from a desire of serving this province, and settling therein, he prays your honors to lend him £100, to enable him to extend and carry on his trade, so that it may be of use to the public in general. He further intends, if encouraged, to erect an engine for the purpose of spinning cotton and woollen yarn, which will be of infinite service to several branches of the weaving business, and enable them, in a short time, to bring their goods to market, as cheap as they can in the old country. And as a security for the payment of the same, at such time as your honors shall think fit to lend it, he purposes to give a security on his frames, to any one or more gentlemen that will be good enough to take the trouble of the same. And your, &c.

JAMES WALLACE.

Negatived. (Industry II. 155.)

*To the Honorable, &c.*

The representation and memorial of Benjamin Hanks, of Windham, &c., humbly sheweth:—

That he, relying upon a belief that your honors are ever desirous to promote and encourage every useful manufactory within this state, he hath taken encouragement to address to your honors upon the subject of fabricating stocking looms; to perform and effect which, he conceives that he is sufficiently



skilled; that he, your memorialist, has been much used to and acquainted with laboring in iron, brass and steel, and every other material necessary to construct the proposed machine; that he is fully persuaded that he could, with some small encouragement, soon construct and finish a number of such looms, to the satisfaction of the public, and every skilful weaver therein; that he conceives that having completed his desires in that particular, that the public would be greatly benefited thereby, not only in more readily and cheaply supplying the soldiery with that necessary part of clothing, viz: stockings, but also the inhabitants of the state. But your memorialist being young, and not of sufficient cash to procure those materials which are necessary for the desired purpose, he is thereby unable and prevented from making the attempt. Whereupon, he humbly prays your honors to take the matter into your just consideration, and grant him such premium as your honors may think proper, upon his having completed a good and sufficient stocking loom, and upon such other conditions as are fit and suitable; and, in the meantime, entrust him, upon proper security, with a sum sufficient for the purpose. Or otherwise, &c.

BENJAMIN HANKS.

Dated in Windham, this 14th day of August, 1777.

(No action on it.) (Industry II. 156.) See clocks.

### STOCKING WEAVING.

*To the Honorable &c.*

The petition of Thomas Hubbard and Christopher Leffingwell, both of Norwich, &c., humbly sheweth:

That your memorialists have, at very great expense and cost, procured 8 stocking frames for the weaving of stockings, and have endeavored to procure workmen to make use of said frames, to prevent, if possible, the necessity of sending away such large sums of specie to procure these articles, in hopes that by said business to make reasonable profit to themselves. But their workmen prove very unsteady and idle: Therefore your memorialists are constrained to take apprentices to find employment for said frames, which have not as yet, borne any profit to them, as they are assessed for said business, and said apprentices are rated for their polls in your memorialists' list, which has so discouraged your memorialists, that they must lay aside business, without the favorable interposition of your Honors. And your memorialists pray your Honors to patronize and encourage them by relieving them from any assessment on said trade, for the term of five years, and likewise release and exempt all persons that shall be, by your memorialists, constantly employed in said trade and business, from being rated for their polls, for the term of two years next coming. Or otherwise, &c.

THOMAS HUBBARD,

CHRIST LEFFINGWELL.

Dated in Norwich, the 20th day of May, 1789.

Granted in lower House. Negatived in upper. (Industry II. 238.)

### WOOLLEN MANUFACTURE:

*To the Honorable, &c.* Oct. 1736.

The memorial of John Davis, of Lyon's Hall, in the county of Hereford, in Great Britain, now resident in Litchfield, &c., clothier, humbly sheweth:—

That your memorialist, about 13 months since, came over into New England from said Lyon's Hall, where he had practised and improved himself in



the art and mystery of a clothier, for the full space of 30 years and upwards, and then brought with him a considerable quantity of full cloths to the value of £300 or £400, sterling M. to sell and vend in this country, all of your Honor's memorialist's own manufacturing, which cloths well suited the country, and sample and specimen thereof your memorialist has here to shew your Honors. And your memorialist designing to have returned, but upon observation of the country, and view of the woollen manufactory, finds that the poorness of the cloth is chiefly owing to the unskilfulness of the inhabitants in the art aforesaid, whereby much good wool is in a great measure lost, and cloth confounded and rendered much less serviceable as well as fashionable for the people; which your memorialist humbly thinks your Honors are well aware is occasioned by the unskilful management of the wool, in mixing and preparing the same for as well as the unqualified practitioners in the mystery aforesaid; a due encouragement whereof under the present and prevailing extravagance of the price of cloths of the English manufactory at home, your Honors doubtless are sensible would commode and benefit the country in a very material article.

Thinking, therefore, there might be a disposition in this Honorable Assembly to give a proper encouragement to some private person that should appear, to set up the same for the cultivation of a trade so very necessary to the country (as far as may be consistent with the country's safety therein) would take leave hereby humbly to propound to this Honorable Assembly, that your memorialist would gladly set up the trade in such place as might best accommodate the people, if therein he might have the countenance and encouragement of this Honorable Assembly; and also, that his knowledge, practice and improvement in his said trade, which he has so long been improving himself in, might be extensively beneficial to the people of this government, (where he is minded to make his abode,) your Honor's humble memorialist would willingly communicate his skill and experience to the people, as to mixing their wool and preparing and qualifying the same for the wheels, by suitable cards for the country's wool; and the country's improving such wool cards as are altogether unsuitable for the same, is a great means of spoiling the cloth, as well as to its decency as duration; and the unskilfulness of the women, in their carding; chops the wool and breaks the staple of it.

Which your memorialist could abundantly satisfy those in the least measure acquainted therewith, and could afford such directions as would facilitate the labor and pains in preparing their wool, with 4 times the ease at least, besides the vastly greater benefit of the cloth; and would instruct the people in such and so many places and towns and counties in the government, as your Honors in wisdom should direct, in any method that your Honors should think best, by public advertisements, and especially by personal instructions in mixing their wool, coloring, fulling, pressing and shearing their cloth.

And your memorialist's request is, as an encouragement thereunto, that he may have, by this Assembly, a grant of such a sum of money of the public treasury, that thereby he may be able to procure such utensils to use and improve in the directions of the people in the premises, and be under advantages to give his instructions to the country in such places, ways and methods as this Honorable Assembly shall prescribe, or of such a tract of the colony's land as may be a meet compensation to your memorialist, for so profitable an undertaking. Or some other way, &c.

JOHN DAVIS,  
Clothier.

Hartford, May 20, 1736.

Negatived.

(Industry I. 128.)



Your Honor's committee appointed to take into consideration the subject matter the memorial of William Crandall, and report what is expedient to be done, etc., beg leave to report,

That a woollen manufactory, in all its branches, would be very important to this State: but the sum proposed by the memorialist to be raised by a lottery, &c., being £6,000 L. M., is too large to be raised by said lottery; and your Honor's committee have not been able to devise any mode which they can with confidence recommend to your Honors for the purpose of introducing the woollen manufactory proposed by the memorialist. All which, &c.

Signed per order.

WM. HILLHOUSE.

(Industry II. 214.)

The committee appointed to take into consideration what further encouragement might be given to manufactures and agriculture in this State,—

Report, That in a general view of the subject as relative to manufactures, the most direct and proper means of promoting them that occurred to the committee were by levying and collecting duties on imports, particularly on such articles as might, with great advantage, be manufactured in this State; but as a regulation of this kind might probably be superseded by the federal government before it could operate to effect, it appears to the committee, improper to adopt a system on this ground. In this view of the subject, the committee have thought proper to report only a temporary provision for the encouragement of the woollen manufactory, which more than any other at present, appears to merit particular attention.

The company formed by gentlemen in this city [Hartford] and its vicinity, for this laudable purpose, appears to be actuated by generous motives in the undertaking, though not without a reasonable prospect, in the ultimate progress of the business, of deriving profit to themselves. But as the first attempt to establish this manufactory must be attended with great expense, and the profits must be, at first, very precarious, the committee think proper to recommend the following encouragements, &c. (230.)

And on their recommendation, the buildings of the company are exempted from taxation, and also the polls of the workmen; and a bounty is granted of one penny a lb. on all woollen yarn that shall be spun and made into cloth at said manufactory before June, 1789. May, 1788. (Industry II. 231.)

*To the Honorable, &c.*

The petition of Jeremiah Atwater, Jr., and William Lyon, of New Haven, humbly sheweth:

That your petitioners, being desirous of promoting the manufactures of this State, have, in the course of the preceding summer, procured a large quantity of sheep's wool, and have also built at a considerable expense, machines and implements for manufacturing the same into woollen cloths of various kinds. That by this manufacture, they have given employment to more than 30 persons, male and female, and hope to be able to continue and augment the business. But as your petitioners are alone in the expense of this undertaking, and as a manufacture of this kind carried on in anywise extensively, is entirely new in this part of the country, and your petitioners find many difficulties therein, and as they conceive that if it be prosecuted, it must be beneficial to the community, they request some encouragement of your Honors, that you would be pleased to grant to them some bounty on the wool they



have and may manufacture; or such other encouragement as to your Honors may seem just. And your, &c.

JEREMIAH ATWATER, Jr.

New Haven, Jan. 5, 1789.

WILLIAM LYON.

(Industry II. 234.)

Lower House refer to a committee. Jan. 1789. (235.)

LINEN.—(*See Hemp Below.*)

And further be it enacted, For the encouragement of making fine linen cloth, that whosoever shall bring to the county court, in the county in which he dwells, any linen cloth which in the judgment of the said county court, shall be in goodness equal to Garlick's of six or seven shillings per yard, according to the usual price thereof in our shops; and will make oath before the said court, that the said linen cloth was made in the said county, by their own industry or their proper charge, shall receive for their recompense, one-quarter part of the value thereof, which shall, by their order, be drawn out of the public treasury of the colony. This act to continue in force seven years. Oct. 1732. (Industry I. 48.)

(No vote on it.)

Committee to confer, consider and draw up, what may be proper to be enacted by this Assembly, relating to premiums on the manufactures and husbandry of this government. May 1735. (Industry I. 125.)

*An act, &c.* Be it enacted, &c. That there be paid out of the public treasury of this colony, a premium of one-sixth per yard, for all fine linen cloth made of yarn of six run to the pound and upwards to eight run, being full yard wide; and one-third for cloth of seven-eighths of a yard wide, made of yarn of the size above said; and one-quarter for cloth three-quarters of a yard wide being well whitened; and for such cloth as above said being unwhitened, the same premium shall be paid, except three pence on each yard to be abated. And for all linen cloth upon which the premium is allowed in said act to be well whitened, being made of yarn, eight run to the pound and upward, the same premium shall be allowed for unwhitened cloth, except four pence per yard to be abated, as is there allowed for well whitened cloth, &c. May 1735. (Industry I. 126.) Not passed.

DUCK.—(*See Hemp Below.*)

*To the Honorable, &c.*

The petition of Richard Rogers of New London, humbly sheweth:—

That your petitioner having insight in the trade of making *canvas* for shipping, and having expended near £140 for the setting up the trade; and hath made of the cloth of good acceptance of those that understand the same.

That your petitioner taking encouragement by the law, page 86, (see page 1, above) to venture upon so great an expense; and considering that the trade being set up, a market will much advance trade, in that so considerable a sum is expended to other governments to purchase of that manufactory, which might be improved in other trading, a market ourselves, as it will advance our own people, being improved in the raising of hemp and flax, and spinning the same; also bring into the government a considerable trade to have it made a market; and said canvas can be made much cheaper than it is now bought, coming from England and Holland.

That your petitioner doth humbly pray your Honored Assembly, that they would be pleased to grant the sole making of it to your petitioner, for fifteen



years in this government. He keeping said trade going forward, for which he hath eight looms already set up, with what other encouragement your Honors will be pleased to grant. And your petitioner, &c.

RICHARD ROGERS.

(Industry I. 106.)

We, the underwriters, having viewed a certain piece of duck designed for the making sails for shipping, made by Mr. Richard Rogers, of New London, do adjudge the same to be very good and substantial cloth for that use; and that he having advanced a very considerable interest for the promoting this design,—it is our opinion, he well deserves all proper encouragement in that affair.

Signed by twenty-eight leading men in New London, &c.

New London, 20th May, 1724.

(Industry I. 105.)

We, the subscribers, being weavers, and work in Richard Rogers, his shop, in New London, and we do declare, that a certain piece of duck, marked No. 4, RRER was wove in said Rogers, his shop, and do further declare, that it is good merchantable cloth, and of the best cloth that is made of that sort of duck.

Signed by six weavers.

(Industry I. 107.)

Lower House grant petition. Negatived in Upper.

The next year, he renewed his petition at greater length: (Industry I. 109.) And was allowed the exclusive privilege of manufacturing duck for seven years. Oct. 1725. (110.)

To the Honorable, &c. May 1741.

The petition and memorial of Samuel Judson of Stratford, &c., humbly sheweth:—

That your Honors' memorialist did, some years since with considerable cost, set up and carry on the trade of weaving duck and canvas; and having made and vended about sixty or seventy bolts, the buyers and all others who saw the same, commended the same for good. But having had the misfortune in that affair, to sell to some persons out of this government, who have not to this day, made payment, for which reason, chiefly, I, for three years last past, laid aside the trade. But now, conceiving the carrying on the trade might be of advantage to myself, and much to the advantage of this government, had I a stock to carry on the same with, and being unwilling to break my landed estate to raise a fund, and having my looms and tackling by me, I have taken encouragement from the generous disposition your Honors have frequently discovered for the promoting of this branch of manufacture in particular,—to pray that your Honors, would grant that I may, for the carrying on said trade of duck or canvas, draw out of the treasury of this colony, the sum of £150 of new tenor bills of credit of this colony, upon my giving security, &c., with the interest, at three per cent., &c. And your, &c.

SAMUEL JUDSON.

Stratford, May the 12th, A. D. 1741. Negatived. (Industry I. 131.)

HEMP.

*An Act for the Encouragement of raising Hemp and Silk, and of making fine Linen.* Oct. 1732. (See Silk and Linen.)

Be it enacted, &c. That it shall be lawful for any and every town in this colony, annually to choose three discreet men in their town, to be surveyors of hemp. And it is hereby provided, that whosoever in the town where such



surveyors are appointed as aforesaid, shall produce 100lbs. of hemp as shall be bright, well cured and water rotted, of four feet at least in length, and well cleansed, fit for use, &c., shall have a certificate thereof to the treasurer of the colony, of the quantity of hemp so raised and manufactured as aforesaid. The said treasurer is hereby ordered to pay out to him 2s. for every 100 weight, certified as aforesaid; and so pro rata for greater or lesser quantities. (Industry I. 48.) No action was had thereon.

*An Act for the Encouragement of raising Hemp, making Canvas of Duck, and also for making fine Linen. May 1734.*

This assembly considering the great profit and advantage that might in time accrue to his Majesty's people in this government, by the raising of hemp, making canvas and fine linen, &c., if the same may be sufficiently encouraged and promoted:

Be it enacted, &c. That there shall be paid out of the public treasury of this colony, to every person or persons inhabiting in this colony, as a premium; the sum of 4d. per pound for every pound of good, well dressed, water rotted hemp, that shall be by him or them raised or procured to be raised, and shall be the proper growth of this colony; provided, there shall be no premium allowed to any man, for any quantity less than 50lbs.

Be it further enacted, &c. That there shall be likewise paid out of the public treasury, the sum of 20s. for every bolt or piece of well wrought canvas of duck fit for use, of 36 yards in length and 30 inches wide, and weighing not less than 45lbs., made of hemp aforesaid, or well dressed, water rotted flax, to be paid to him that shall do, or procure the same to be done and manufactured as aforesaid.

Be it also further enacted, &c. That as a premium for the encouragement of making fine linen, there shall also be paid out of the public treasury of this colony, to every person or persons that shall make or procure to be made within this colony, any fine linen cloth, as followeth, viz: for every yard that is well spun, wove and whitened, and is a yard wide, and made of yarn that is eight runs to the pound, 2s. per yard; and so pro rata for wider or narrower cloth so made; and also for fine cloths of the same width, a proportion to the fineness thereof, to be determined by the number of runs to a pound, provided none be allowed to be narrower than three-quarters of a yard, and that no deceit or fraud be imposed upon the public, &c.

Provided, this act shall continue and be in force for the space of five years from the rising of this assembly, and no longer. (Industry I. 51.)

Act continued in force five years. May 1740. (Industry I. 67.)

Continued in force till May, 1750, as voted by lower house. Upper house dissent. May 1745. (Industry I. 77.)

*An Act, &c. May 1787.*

Be it enacted, &c. That all persons in this state may annually, &c., insert in their lists of rateable estate, &c., an account of the quantity of land which they shall have severally sowed with hemp, &c.; and listers shall deduct from the list of such persons respectively, at the rate of 40 shillings per acre, for any quantity of land sowed with hemp, &c., as aforesaid.

(A duty was to be laid on the importation of hemp, of 6s. per 100cwt., after May 1789.) (Industry II. 70.)



## FLAX MACHINE.

*To the Honorable, &c. May 1753.*

The memorial of John Bulkley, of Colchester, in the county of Hartford, in the colony of Connecticut, in New England, humbly sheweth :—

That whereas, there are great quantities of flax raised in this colony, and that article is become so considerable a part of the staple thereof, that the encouraging the raising and manufacturing so valuable a commodity, by all proper ways and means, must conduce much to the public interest; and as the common way of dressing and cleansing flax here is so very laborious, and calls for so great a number of hands to be employed in that business, that in a country where laborers are so scarce, and labor so very dear, it is a great discouragement that attends the raising of that article; so any way that can be devised for the better and more expeditious dressing of flax, and with much less labor, would be serviceable, and tend much to promote and encourage the farmers in raising greater quantities of flax in this colony.

And whereas, your memorialist understands that the trustees of the society for managing the linen manufacture in Scotland, have advised to and encouraged the erecting and setting up there a late invented water machine, for dressing and cleansing flax, which does it in a better and more expeditious manner, and with a great deal less labor than the common way, and is found by experience to be a great encouragement to the linen manufactory there; and as your memorialist apprehends that the setting up such machines in this colony would have the same effects here; so he proposes, upon suitable encouragement, to be at the pains and expense of procuring the same kind of machines to be used in this government.

Whereupon, your memorialist humbly prays this honorable assembly to encourage him in so good a design, (which if it succeeds, he imagines will be greatly for the public advantage, though it cannot be effected without great charge and expense to the undertaker,) to grant to him and his associates the sole liberty and privilege of erecting and setting up machines for the purpose aforesaid, within this colony, for the space of twenty-one years next ensuing the rising of this assembly; and to prohibit all other person or persons erecting the same kind of machines, or any in resemblance or imitation of them, in this colony, without leave or license from your memorialist and his associates, during the full term aforesaid.

Provided your memorialist and his associates shall, within eighteen months next ensuing, erect and set up one machine for the purpose aforesaid, in some convenient place in this colony, as he and they shall think proper, for a trial or experiment.

Provided also, that if said attempt should prove successful, that then, if the said memorialist and his associates shall not, within seven years next ensuing after the setting up of said first machine, erect and set up in some convenient place in each county in this colony, for the purpose aforesaid, one such machine at least, that then in such case, it shall be lawful for any other person or persons to set up machines for the same purpose, in every such town where the said memorialist and his associates shall not, within seven years have erected one such machine as aforesaid, at least.

And your memorialist is willing that in your honors' grant, a clause should be inserted, that nothing therein should be construed or understood to prohibit any persons in this government from making or using any instrument or ma-



chine for the purpose aforesaid, that have been or are now in use in this colony. And as in duty, &c.

JOHN BULKLEY.

Hartford, May 1753.

Negatived in lower house. (Industry I. 171.)

*To the Honorable, &c.* Oct., A. D., 1753.

The memorial of Jabez Hamlin and Elihu Chauncey, humbly sheweth:—

That whereas, there is a new invented water machine for the dressing of flax, brought into use in Scotland and Ireland, by the societies for managing the linen manufactures there, which is found by experience, to be a much more expeditious and less expensive method than that in use here.

And whereas, your memorialists are of opinion that the procuring the said machine to be set up in convenient places, and brought into use in this colony, would greatly encourage the raising larger quantities of flax, and conduce much to the public interest of this government,—we would propose to be at the charge and expense (which will be very considerable,) of procuring the said machine, to be set up and brought into use here, upon proper encouragement.

Whereupon, your memorialists humbly pray this honorable assembly to encourage them in so good a design, by granting to them and their associates, the sole liberty and privilege of erecting and setting up the said machine for dressing of flax, in such towns in this colony as they shall think proper, for the term of twenty-one years next ensuing; and that all other persons be prohibited setting up in this colony, any such machines, or any in imitation of them, during said term.

Provided the said memorialists shall, within eighteen months next after the rising of this assembly, procure one such machine, to be set up in this colony for an experiment.

Provided also, that if the said memorialists shall not, within seven years next ensuing, set up one such machine at least, in every town in this colony, that they shall forfeit and lose the benefit of setting up in all such towns as they so neglect, after the seven years are so expired, and the inhabitants of said towns may themselves set up said machines, as they see cause. And in all the towns in which the said memorialists shall set up said machine within said seven years, they shall keep the same up and in repair, during the said term of twenty-one years. And in case they shall let any of them be out of repair the space of fifteen months, they shall forfeit and lose the benefit of the monopoly herein granted, in such town where the said machine so lies without repairs.

Provided also, that this grant shall not hinder the use and improvement, or setting up hereafter, any mills or machines that are now used in dressing flax in this colony; nor any other that may be invented, if diverse from, and not in imitation of the machine your memorialists pray for liberty to erect and set up.

JABEZ HAMLIN.

ELIHU CHAUNCEY.

(Industry I. 172.)

Liberty was granted for fifteen years, &c. (173.)

### SILK.

*An Act, &c.*

Be it further enacted, &c. That whosoever shall raise silk among us, and shall shew it to the county court in which county it is raised, at their next



sessions after the making thereof, and will, upon their oaths, declare before the said court, that by the silk worms which they have nourished and brought up since the last sessions of the said court, the said silk was made. That then said court shall certify the same to the treasurer of the colony, and order him to pay out of the public treasury, the sum of ten shillings per pound, and so pro rata for greater or lesser quantities, to him that brings such certificate. Oct. 1732. (Industry I. 48.)

Not acted on by the Assembly.

*An Act for the Encouragement of the Raising of Silk in this Colony.*

This Assembly, observing and being well assured, that good silk may be here made here, and that by proper improvements, a sufficiency thereof may be raised and produced amongst ourselves, whereby industry may be promoted and the wealth of this government in time much increased; and considering that the beginning of things beneficial and profitable, are attended generally with difficulty and charge, which use and experience may remove, abate, and render easy and profitable.

Be it therefore enacted by the Governor, Council and Representatives, in general court assembled, and by authority of the same, that there shall be paid out of the public treasury of this colony, as a premium for the raising silk; that is to say, for every ounce of good sewing silk, one-sixth; for every pair of silk stockings weighing 4 ounces, and so pro rata seven-sixths; for every yard of silk stuff, 1; and for every yard whereof the warp is all silk, two-thirds; for every yard of silk half yard wide, weighing less than one ounce, three-ninths; for every yard weighing one ounce, and less than two ounces, six-ninths; for every yard weighing two ounces or more, nine; all to be well wrought:—which premium shall be paid on an order obtained of the county court, on the public treasury aforesaid, to be given by the court in the county where the person dwelleth, that shall produce the said silk, and shew to the satisfaction of the said court, that it is bona fide, the growth and product of the silk worms, bred and nourished in this colony, and that no premium hath been before taken or allowed for the same or any part thereof.

This act to continue in force for the space of 10 years, and no longer. (Colony Records VI. 161.)

Continued in force 10 years longer, May 1745. Lower House dissent. (Industry I. 76.)

*To the Honorable, &c.*

The memorial of Nathaniel Aspinwall of New Haven, humbly sheweth:—

That from the experiments that have been made, there is great reason to believe that the cultivation and manufacture of silk, might become a source of much wealth to this state, especially as a principal part of the labor might be performed by persons aged, decrept, &c. capable of doing very little if any other business. But as the planting and cultivation of the mulberry tree would be attended with considerable present expense, without any immediate profit, the good people of this state cannot be induced to turn their attention to the business without some recommendation and encouragement from this Honorable Assembly. The importance of encouraging the manufactures of this state must be obvious; and as there is a fair prospect that the silk manufacture might be improved to great advantage and profit to the state—

Your memorialist, therefore, humbly prays your Honors to afford your patronage to the infant manufacture; and grant the small encouragement of exempting the polls of such persons from the list, for the term of one year,



who shall plant, cultivate, and raise one hundred mulberry trees, and keep them well pruned and attended, and for a greater number of said trees an exemption in proportion; and also free the land whereon they grow from taxation, being set in the proportion of one hundred trees to an acre; or in some other way, &c.

NATHANIEL ASPINWALL.

Dated at New Haven, the 2nd day of October, 1783.

(Industry II. 184.)

Referred to a committee, who report favorably, Jan. 1784. (183.)

*An Act to promote the making of Raw Silk within this State, January 1784.*

Whereas, by the experiments which have been made, it is highly probable that the making of raw silk will be attended with much advantage to the good people of this state. Therefore,—

*Be it enacted, &c.* That from and after the first day of March, A. D. 1784, to the first day of March, 1793, whoever shall plant one hundred thrifty shrubs or saplings, of three or more years growth, of the white mulberry tree on his, her, or their land within this state, at such distances from each other as will be favorable for their growth and for collecting their leaves, shall receive at the end of every year, and during the term of three years from and next after the year in which such saplings shall have been planted as aforesaid, ten shillings, L. M., and so in proportion for every one hundred of such saplings, planted as aforesaid, upon proof and certificate thereof as hereafter directed, that such saplings were, at the end of every three years after they were so planted in a thrifty condition. Every such certificate shall be given in at the end of every of the three years as aforesaid; and no certificate shall be given for any number of such saplings, but for one or more entire one hundred as the case may be.

*Be it further enacted,* That whoever shall make any raw silk from worms and mulberry trees of his own raising within this state, by properly winding the same from the balls or cocoons, after the said 1st day of March, and for fifteen years next thereafter, shall have and receive 3d. L. M. for each ounce of such dry silk, which he, she or they shall make as aforesaid.

Every of which bounties given by this act, shall be paid out of some tax which has or shall be granted for the support of the civil government of this state.

[The remainder of the act provides, that on the certificate of two justices of peace, the collector of the tax may pay said bounty.] (Industry II. 62.)

*An Act, &c.,* (Repealing the above, and providing,) That whoever shall make any raw silk from worms and mulberry trees of his own raising, within this state, by properly winding the same from balls or cocoons, after the 1st day of July next, and for ten years next thereafter, shall have and receive as a bounty from the treasury of this state, 2d. lawful money, for each ounce of such silk well dried, which such person or persons shall make as aforesaid; which bounty shall be paid out of the duties arising on the importation of foreign articles into this state, &c. May 1784. (Industry II. 63.)

MANSFIELD SILK COMPANY.

*To the Honorable &c.,*

The memorial of a number of the inhabitants of the town of Mansfield, within said State, whose names are hereunto subscribed, humbly sheweth:



That your memorialists, under a full conviction of the unhappy situation to which they and the other inhabitants of this State have been reduced by reason of drawing from us our circulating medium, and depriving the country of her wealth in purchasing articles of foreign growth and manufactures, have, for a considerable time past, turned their attention to the cultivating of mulberry trees, and the manufacture of silk. And your memorialists would inform your Honors, that from the encouragement of the Honorable Legislative body of this State, in the premiums which they have been pleased to grant, from the natural fitness of the soil for the production of the mulberry, and by your memorialists' own industry, they have been able to raise large quantities of raw silk, some of which has been manufactured into cloth, and the remaining part into sewing silk, which if properly made, is acknowledged to be equal to any that is imported. And your Honors' memorialists would beg leave further to state, that they live contiguous to each other, and from the nature of the soil which they possess, and from their situation, they have not the least doubt but that, under proper regulations, they should not only be able to supply the people of this State with sewing silk of the best quality, but afford a considerable supply of silk cloths, and in a short time, make the silk manufactory not only advantageous to themselves, but of utility and importance to the public.

Whereupon, your memorialists pray that your Honors would grant that they may be formed and incorporated into a company or body which shall be called and known by the name of the Director, Inspectors and Company of the Connecticut Silk Manufacturers, and that by that name they and their successors forever may have perpetual succession, and may be persons in law capable of suing and being sued, pleading and being impleaded in all suits, and also may have power of purchasing, holding and conveying any estate, real or personal, and may have a common seal, and that they have power of appointing or choosing a director, inspectors, and other necessary officers for said company, at such time or times, and in such a manner as to your Honors may seem meet, who shall be vested with such powers as your Honors shall judge necessary: And further, that said company have power of passing by-laws and rules for the well ordering and regulating themselves in and about the raising and manufacturing silk, and which are not repugnant to the laws of this State, which by-laws shall be binding on and among themselves; and likewise that they may make such regulations as to them shall seem necessary, respecting the admitting persons in, and making them members of said company: and that said company and the members of the same be exempted of and freed from every kind of tax or assessment for or on account of the profit or advantages which may or shall arise from or by means of said manufactory. Or that your Honors would grant your memorialists such other privileges and immunities as in your wisdom shall appear to be most conducive in rendering said manufactory both permanent and useful. And they, &c.

Signed by

THOMAS BARRONS,

Dated at Mansfield, Sept., 1788.

and 31 others.

(Industry II. 236.)

Act of incorporation, (requiring a vote of two-thirds to admit a member,) Oct., 1788. (237.)

### LINSEED OIL.

At a General Assembly, &c, Oct. 1718,

At the humble suit of John Prout, Jr., gentleman, Moses Mansfield, mari



ner, and Jeremiah Atwater, brasier, and for their encouragement to set up a mill and other necessary furniture, to improve the flax seed of this colony for the extracting and producing linseed oil:—

This court hath therefore granted, and doth hereby grant to the said John Prout, &c., the whole and sole privilege of making linseed oil within this colony, and that no other person or persons shall set up any mill or other engines for that purpose, within the county of New Haven, during the space of 20 years next coming, nor in any other part of the colony, without the special leave asked of this court, whereof the parties above named shall be seasonably notified, within the 20 years above mentioned. Provided said John Prout, &c., shall set up such mill, and all needful furniture for the use aforesaid, in New Haven, within the space of 2 years next ensuing, and keep the same in good repair, at all times till the expiration of the said 20 years.

(Industry I. 121.)

*To the Honorable, &c.,*

The prayer of Samuel Burr and Nathaniel Burr, Jr., of Fairfield, &c., humbly sheweth,—

That the General Assembly at their sessions, Oct. 1728, &c.

\* \* Although the said undertakers have erected and set up a mill for the purpose aforesaid, yet they have not made so steady an improvement thereof as to use the flax seed even of the county of New Haven, much less of the other counties, nor to provide oil for the people thereof. Neither do they improve, of late years, any part of the seed raised in the county of Fairfield, nor furnish them with oil, &c. We, therefore, your humble petitioners, pray you would be pleased to grant liberty to us to set up a mill, &c., in the county of Fairfield, etc.

Fairfield, Sep. 13, 1732.

Negatived, Oct., 1732.

SAMUEL BURR,  
NATH'L BURR, Jr.

(Industry I. 122.)

### T E A .

*To the Honorable, &c.* Oct. 1765.

The memorial of Alexander Phelps, Amasa Jones, and John Coleman, all of said colony, humbly sheweth,—

That your Honors' memorialists have, with great pains and expensive pursuits, made discovery of a plant in a distant part of this continent, bearing such resemblance in figure and taste to the genuine foreign Bohea tea, that we are well assured 'tis the same kind. Whereupon, we now address your Honors, praying your attention to a discovery so highly interesting and beneficial to this community, to people of all ranks in this day of distress; as it will be not only much cheaper, but also more easily purchased by barter than that which is imported: and as this discovery has already been attended with great expense, and still must be much more so by transplantation, gaining the art of thoroughly curing, etc. We pray your Honors would grant us a patent of manufacturing, and also vending such plant or tea, within this colony, exclusive of all others, for the space of 20 years next coming, or for such other term as your Honors shall think proper. And your, etc.

. Dated at Hartford, this 1st day of Oct. 1765.

Negatived.

(Industry II. 123.)

ALEX'R PHELPS, *et al.*

### M O L A S S E S .

Upon the petition of Edward Hinman, of Stratford, praying liberty and a



commission to make molasses of Indian corn stalks, in the county of Fairfield,—

This Assembly grant the liberty prayed for to the petitioner, within the county of Fairfield; and that any person or persons within said county, shall, within the space of 10 years, presume to set up any works for the making of molasses of corn stalks, without allowance from the said Edward Hinman, shall pay and forfeit unto the said Hinman the sum of £5 a month;—always provided the said Hinman make as good molasses, and make it as cheap as comes from the West Indies. Oct. 1717. (Industry I. 123.)

### S A L T.

*To the Honorable, &c.* Oct. 1746.

The memorial of John Jerom and Stephen Jerom, Jr., of Branford, etc., humbly sheweth:—

That, whereas, it would be a great public advantage to the inhabitants of this colony, if we could get into the method of making salt by boiling sea water, as practised in sundry places in Europe. And the charge of setting up convenient works for that purpose would be very great and the success uncertain, as appears, in that the General Assembly at Boston, about 50 years ago, granted to Elisha Cook, Esq., and others, the sole privilege of making salt in the province, for the space of 14 years; and yet either by reason of the freshness of the sea water, the coldness of the climate, or their want of sufficient skill, they were not able to effect the design to any advantage. Yet your petitioners having been instructed in that art are willing to be at the charge and risk of making an attempt of that nature, if they may obtain the favor and countenance of this Honorable Assembly.

Your petitioners, therefore, humbly pray that this Honorable Assembly would be pleased to grant to your petitioners and their associates, the sole license and privilege of making salt as aforesaid, within this colony, for the space of 14 years next ensuing. And so, &c. JOHN JEROM,

(Industry I. 182.)

STEP'N JEROM, Jr.

Assembly grant the same for 14 years:—

Provided, nevertheless, that if the memorialists &c., shall neglect or fail to erect, set up, and prepare suitable works and materials for the making of salt as aforesaid, for the space of 2 years, or shall fail of making the quantity of 500 bushels of good salt in any one of the remaining 12 years, &c., then this grant &c., shall be void. Oct. 1746. (Industry I. 183.)

Upon the memorial of Stephen Jerom, Lyme, Oct. 1749, &c.

\* That he therefore speedily erected and set up salt works in the town of Lyme, in this colony, at very great expense and charge, and hath made considerable quantities of good salt, to the great benefit of his Majesty's subjects in this colony: and that he finds, by experience that said affair is capable of great improvements, had he money sufficient to carry on said business, for the want of which he finds himself much hindered in prosecuting said affair; and praying for a grant of £1,000, O. T., out of the colony treasury on interest. (Industry I. 184.)

Assembly loan him the same for 2 years, on his procuring security, &c.

(186.)

He again petitions, Oct. 1751, and adds,—

Whereas, your memorialist lately came into this country from Great Britain; and upon my first coming into this colony, found salt to be scarce, and fetched



a good price; and being willing, &c., undertook to raise salt works for the making of salt, and expended in so doing the sum of above £2,500, which sum exhausted more money than the value of all the estate your memorialist had in the world, &c. (But as the price of salt fell one half at the ending of the war, he asks, etc.) (Industry I. 187.)

Assembly continue the loan of £1,000 for 3 years, without interest. (188.)

Upper House dissent.

After various efforts, seconded by assistants in Lyme, he petitions, and adds,—

He set up said business, and with the utmost diligence followed the same for the space of 3 years or more, and made more than 3,000 bushels of good salt, etc. He is desirous his bondsmen should be reimbursed; and prays for a lottery to raise £150 L. M., equal to £1,000 O. T. loaned.

Lyme, May 6, 1760..

STEHN JEROM.

Negatived.

(Industry II. 193.)

Again he states he has paid all the £1,000 loaned, except £250, which he prays may be remitted.

May 12, 1769. Negatived.

(Industry II. 136.)

### SUGAR REFINERY.

*To the Honorable, &c.*

The memorial of George Phillips, of Middletown, humbly sheweth :—

That the consumption of loaf sugar imported into this state annually, amounts to a very large sum, which is, in general, paid for in cash; that the manufacture of that article has not been set up within this state, and the stock and buildings necessary to carry forward that business will amount to a sum not short of £6000; that your memorialist is desirous to set up the manufacture within this state, but in accomplishing his purposes, he will be obliged to adventure most of his property, which will greatly injure him, unless he has some public encouragement on this subject. He therefore prays your honors to grant him the exclusive privilege of manufacturing that article within this state, or such part thereof as shall be reasonable, for such term of time as your honors shall judge reasonable. And he, &c.

GEORGE PHILLIPS.

Dated in Middletown, Oct. 15th, A. D., 1784. (Industry II. 193.)

Assembly allow him the exclusive privilege of manufacturing for ten years, provided they set up their works by December 1, 1785; and provided the assembly may grant the same privileges to two other sugar works in this state within said ten years. (Industry II. 194.)

John Heyleger, late of St. Croix, W. I., now of New Haven, Elias Shipman and Lina Denison, of New Haven, and John Morgan, of Hartford, petition for a sugar refinery in New Haven. May 16, 1785. (Granted.) (Industry II. 197.)

A similar grant was made to Elijah Backus, Joshua Huntington and Dudley Woodbridge. Norwich, May 1786. (Industry II. 199.)

### PITCH.

John Eliot, of Windsor, offering to this assembly, that he will undertake the making of pitch in considerable quantities, which may be of great advan-



tage to those parts of the government where tar is to be obtained, and an addition to the naval stores, if he may be encouraged therein :

This assembly, being well satisfied of the public advantages of such a new improvement, never heretofore made in this government,—do grant to said John Eliot, &c., the sole making of pitch within this government, for the term of ten years next ensuing, &c. And for the better encouragement of the said undertaker, this assembly orders and grants the said undertaker, that if any pitch shall be made in this government, by any other person or persons, except for their own use, and not for sale, whereby the said undertaker will be more or less obstructed, hindered or disadvantaged, and the intent and good meaning of said grant frustrated,—it shall be lawful for said John Eliot, or his assigns, by warrant from authority, directed to any officer or indifferent person, to seize said pitch, one-half for his own use, and the other half to the use of the colony, to be tried and condemned in any of her Majesty's courts in this colony.

Provided always, nothing herein shall be taken to hinder the masters or owners of any vessels trading in this government, to boil up tar for the use of their vessels.

Provided also, that the said Eliot do set about and effect the said undertaking within the space of two years after this present session of the general assembly. May 1708. (Industry I. 99.)

Encouragement had before been given by the colony for the manufacture of pitch and tar ; but no such general grant.

#### P O T A S H .

Upon the humble motion, request and representation of Samuel Williard, Jabez Hamlin, Seth Wetmore, Elihu Chauncey and Robert Fairchild, shewing their desire and design of undertaking to make and manufacture potash, if they may be suitably encouraged therein, and that the same, if performed, will be of great advantage to this government ; therefore that all due encouragement be given to promote such profitable and useful manufacture in this colony :—

Be it enacted and granted, &c., unto the said Samuel Williard, &c., the whole and sole liberty and privilege of making and manufacturing potash within the bounds and limits of this colony, for and during the full term of twenty years next after this assembly, and that they, &c., shall have liberty to erect, build and set up any works, engines and machines for that purpose, within the limits of this colony, within the term aforesaid ; and all other persons, &c.

Always provided, that this grant or patent is upon condition, that the aforesaid Williard, &c., shall make and manufacture two tons of good merchantable potash, fit for transportation, within the term of two years next after the rising of this assembly, and two tons annually, every year after, during the term aforesaid.

Provided also, that the benefit of this grant or patent shall not extend to the said grantees in such county in this colony, where they shall not, in the space of five years, &c., set up and erect proper works for the manufacturing potash as aforesaid. May 1741. (Industry I. 134.)

*To the Honorable, &c.* Same petitioners add :—

Your memorialists say that they have been at considerable expense and cost to be instructed in the art and skill of making of said potash, and have set up



works at Middletown, and made some trial of making the said potash, and have made several barrels of it; and have, for more than twelve months, sent the same home to England to have the same proved, and to know what the same is worth by one Mr. Joseph Scott, of New York, who has been gone for England above one year, who promised to send us an account thereof; and more, we have sent home, by way of Boston, and before now expected returns, that so we might be further satisfied whether it would be a profitable commodity, and worth our pains to make the same; but as yet we have had no returns; and the time is now near expired that we were to make said two tons; and we have now, in two counties more, provided and been at cost in procuring ashes and other materials, to set up in other counties; [we] would therefore humbly pray, that notwithstanding the said provision in said patent, that if your memorialists shall make two tons by the last of May, 1744, with what they have already made, that the said patent may not be forfeited, &c.

JABEZ HAMLIN, et al.

Hartford, May 13, 1743. (Industry I. 135.) Granted. (136.)

At the commencement of the revolutionary war, the manufactures of *potash*, *salt-petre* and *powder* were encouraged, and extensive works were erected, and large quantities of powder were made, through the war, particularly in East Hartford and Glastenburg, and Windham, &c.

No individuals were ever allowed to practice the art and mystery of *tanning* without license from the general court, although no exclusive privileges were granted.

## S N U F F.

*To the Honorable, &c.*

The memorial of William Pitkin, of East Hartford, humbly sheweth;—

That he hath suffered great losses by fire, in manufacturing gunpowder for the use of this state, and a mill which cost about £400, is now altogether useless, which he wishes to employ for his own benefit and the emolument of the public, without injury to any individual. Your memorialist is confident your honors are fully persuaded of the importance of encouraging our own manufactory; and for that purpose, begs your honors to grant him the exclusive right and privilege of manufacturing snuff, such length of time, free from assessments and taxes, as will be sufficient, with other prospects, to induce a young man, skilful in said manufactory, to make it a business for life. And your, &c.

WILLIAM PITKIN.

Hartford, June 1, 1784. (Industry II. 187.)

At first negatived in lower house, but finally granted on those terms for fourteen years.

*To the Honorable, &c.* Oct. 1785.

The memorial of Elijah Lothrop, of Norwich, &c., and Timothy Donevan, late from Ireland, humbly sheweth:—

That the said Lothrop hath in Norwich aforesaid, an excellent stream of water for useful mills of all kinds that go by water, and owns a building which during the late war was erected and made use of by Mr. Nathaniel Niles for manufacturing wire, and said Mr. Niles being now gone into another state, said Lothrop hath purchased the same for the purpose of a snuff mill:

That the said Donevan hath contracted with the said Lothrop for the use of



said stream, for a long time to come, viz : for the term of fifty years, with design to set up said manufacture of snuff, as also the business of a

### CLOTHIER AND BLUE DYER,

and is well skilled in those manufactures, and hath large property, which he is desirous to bring into this state, sufficient to carry on the same, and purposes to settle his sons in those manufactures in said Norwich. That your memorialists have already been at great expense in preparing proper gear and engines for said business, and were pursuing their said design with speedy progress, until a few weeks passed, when to their great surprise and astonishment, they were informed that the Hon. William Pitkin, Esq., did in May, 1784, obtain, &c. (above.)

Now your memorialists beg leave to suggest to your honors, that the Hon. William Pitkin, Esq., not being the original inventor of the art of snuff making, nor skilled in that business, had no claim to that grant, in exclusion of those who well understood the business, and had a good right to exercise their skill in said art, for the support of themselves and families, by a lawful calling; nor was it known that any legislative body had a right to grant away the trade and professions of the subjects of the state, to any individual, for his private emolument, or to make exclusive grants to exercise any particular calling, unless to such persons as were the original inventors or prosecutors of such business or trade. And though exclusive grants are often made to the authors or publishers of useful books, for printing and vending the same for their own advantage, yet it is done as a reward for their labor, in which case, no man's right is taken from him; but people only who have no share in the invention, are prevented from taking the benefit of an author's labors before he can reap an adequate reward for his labor or discovery. And your memorialists having done nothing to forfeit their rights and estate in the business aforesaid, cannot be persuaded that this honorable assembly meant, by said grant, to deprive any individual of such right, but only to grant liberty to said William Pitkin, Esq., to carry on said business, free from all taxes thereon, which your honors had a good right so to do.

Wherefore, your memorialists pray your Honors to consider their case, and explain said grant to William Pitkin, Esq.; and grant liberty to your memorialists to carry on said business, together with the business of clothing and blue dyeing, and other colors in this state, subject to the same law of taxation as other manufactures in this state are subjected to; which will prevent the said Donevan from the necessity of moving with his property, into the state of New York, to carry on said manufactures, which will produce articles of commerce that may find their way into this state under the burthen of the merchants' profits. Or in some other way, &c.

ELIJAH LOTHROP.

TIMOTHY DONEVAN.

Dated at Norwich, the 8th day of September, 1785. (Industry II. 206.)  
Negatived.

*To the Honorable, &c.* October 1785.

We, the subscribers, beg leave to signify our desire, that Mr. Elijah Lothrop and Timothy Donevan, may be allowed to carry on the business of snuff making in Norwich, and think the same cannot be of any damage to Col. Pitkin, as snuff is an article of trade, and will always find its way to the best market, it may be an article of exportation, or prevent it from being im-





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ported from the neighboring states, and from Europe. Said Donevan, also proposes to carry on the business of clothing and dyeing in the European manner, which must also be prevented, if he is not suffered to carry on the business of making snuff.

Signed by 243 residents of Norwich, Preston, Groton, Lebanon, &c.

Dated at Norwich, September 8, 1785. [Industry II. 207 to 210.]

Mr. John Currie of East Hartford, testifies that Col. Wm. Pitkin applied to me about the month of July, 1784, to undertake the manufacture of snuff in East Hartford. In consequence of said application, I came from Philadelphia to said East Hartford, and assisted in laying the plan for the buildings, and saw the grant of the Assembly, and the engagements there made induced me to leave Philadelphia with my family,—where I am now settled to carry on said business. Every objection was thrown in my way to prevent my coming by intercepting letters, and preventing my business in Philadelphia, and offering high wages to prevent the manufacture in New England. The wages and encouragement given me, by Col. Pitkin for undertaking, I esteem better than £200, lawful money. I further say, that all the snuff made use of in the state of Connecticut, will not take the mill now erected, half the time it can work.

JOHN CURRIE.

(Industry II. 211.)

Hartford, Oct. 17, 1785.

Builders testify, that Pitkin's buildings will cost £700. (212.)

Lothrop's petition is rejected.

[I, Wm. S. Porter, who have been some years employed in the office of Secretary of State of Connecticut, in compiling an analytical index of Public Documents, hereby certify that the above are true copies or abstracts of papers and records in said office, as per references.

Hartford, Feb. 28, 1851.

WM. S. PORTER.]

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Respectfully submitted.

THOS. EWBANK.

WASHINGTON, January, 1851.











